American Bee Journal

MASSACHUSETTS AGRICULTURAL COLLEGE.

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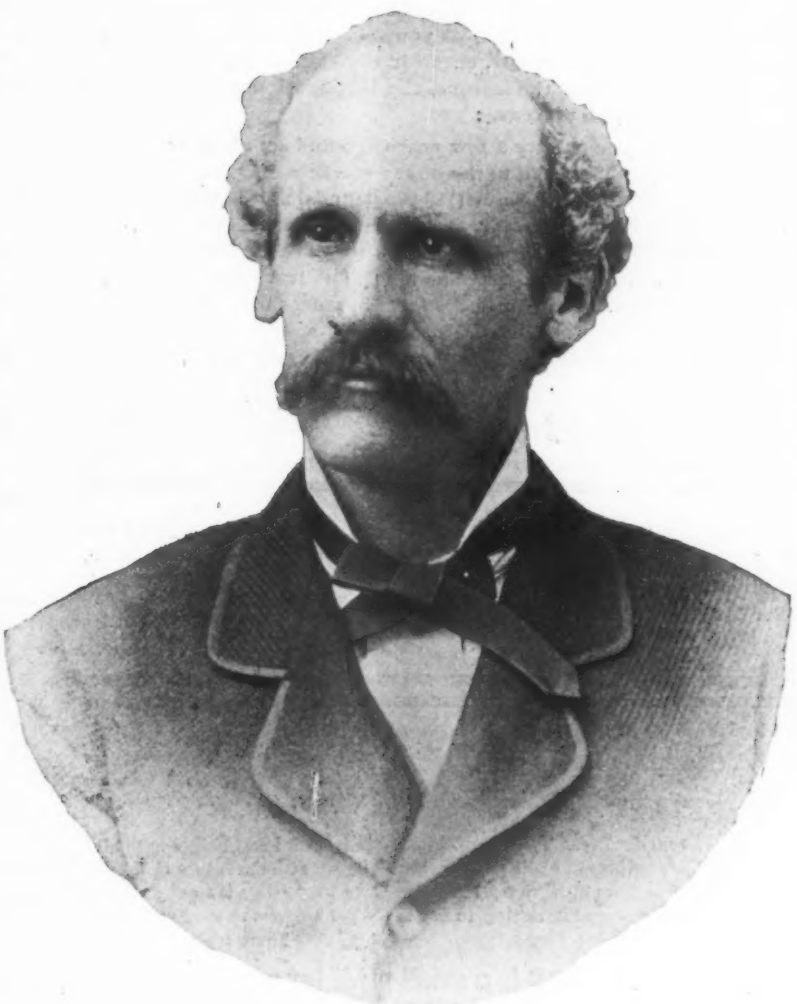
1840 Courtesy Gleanings in Bee Culture. 1903



THE LATE CAPT. J. E. HETHERINGTON.

Correspondence Course in Bee Culture.

Last fall we announced this course and made a special offer to students for early enrollment. We have secured quite a number of students, but nearly every one of these wants to continue his own bee-keeping so that we find ourselves without a sufficient number to recommend to parties wanting help in their yards.

We have inquiries now for help from a number of States—California, Colorado, Florida, Idaho, Illinois, Pennsylvania, Michigan, and other States. See what one of our students says:

THE A. I. ROOT CO., Medina, Ohio. LA COSTA, TEXAS, Jan. 28, 1905.

Dear Sirs:—I am very grateful for the 1905 edition of the "A B C of Bee Culture". I am highly pleased with your instructions in your Correspondence Course. It brings out points the amateur could never find by reading bee-books as it gives the essential parts in rotation so to explain them understandingly. It is like having a teacher or trying to study off-hand. Saving so much time and getting the foundation started right is half the battle. I hope to be an expert bee-keeper some day. Should I fail I certainly could not blame you. Everything bearing your name is first-class. May you ever prosper and live long to instruct us. With best wishes, Yours truly, W. R. HESSKEW.

Send for our prospectus, or, better still, send us your order with $10.00, for which we will send you:

Complete Course of 17 Lessons.
Gleanings in Bee Culture 1 Year.
1 A B C of Bee Culture.

We give in addition personal answers to as many questions as the student desires to ask, either on bee culture, locations, help, honey markets, or, in fact, any subject relating to bee-keeping. We know where many good locations are yet untouched; where the good honey markets are; who is needing help, and hundreds of other things that the bee-keeper wants to know. We can't tell you these things unless you ask. If you have hesitated to ask us, thinking we could not well afford to give time to answer your questions, enroll in our Correspondence Course. Never mind if you have been a bee-keeper for 20 years. If you do not need the lessons, the information we can give you by mail on a variety of topics will more than pay you. Let us show you one case:

A party became interested in bee-culture a few years ago and set about to build up a large apiary. He succeeded remarkably well, but paid little or no attention to the honey markets, his time being taken up with other matters. The third season he produced a very large crop of honey (150,000 pounds) and being unacquainted with the markets, he sent it for sale to a large city, to a house no more familiar with the honey markets than he. It appears that they sold it at any price they could get, for he told us later that the information we gave him of another market would have saved him over a thousand dollars on the one sale. (He hadn't asked us for it, but learning of the situation we wrote him, but too late; the sale had been made.) Perhaps the American Bee Journal readers think they would not be benefited. We assure you there are dozens of ways in which you can be helped.

Here is what one of our customers thinks of our "A B C of Bee Culture", which is included with the course:

"After looking through the 1905 'A B C of Bee Culture', just received to-day, I told Mrs. C. I would not take $25.00 for it if I could not get another copy.—P. F. CONKLIN, Elmira, N. Y."

The New Edition (1905) "A B C of Bee Culture" is $1.20, postpaid, if ordered alone.

And another customer speaks thus of Gleanings in Bee Culture:

DANVILLE, N. J., Dec. 12, 1904.

Dear Sir:—You ask if I have found "Gleanings" a good investment, and I can truly say the investment has not only been good, but very good. Although I do not keep bees for profit at this writing, but hope to at some future time, will say that I am trying to learn all I can about the subject, and "Gleanings" adds more ideas to my limited store of knowledge than any other publication I receive. All the departments treated in this semi-monthly paper are very interesting to me, and I get anxious to see its pages when the date arrives for its appearance.

Yours truly, RALPH P. FISHER.

Don't you think $10.00 is a small price for what we are offering you?

Gleanings (semi-monthly, 52 pages) is $1.00 per year if ordered alone.

THE A. I. ROOT COMPANY,
MEDINA, OHIO.

ESTABLISHT IN 1861

AMERICAN BEE JOURNAL

THE OLDEST BEE-PAPER IN AMERICA

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GEORGE W. YORK, Editor. CHICAGO, ILL., FEB. 23, 1905. Vol. XLV.—No. 8.

Editorial Notes and Comments

A Capt. Hetherington Memorial Double Number.

That is rather a big heading, but so is this a big number of the American Bee Journal. It contains some very interesting reading matter, not only on the life of Capt. Hetherington, but on a variety of other subjects as well.

Mr. P. H. Elwood, a life-long, intimate friend of Capt. Hetherington, has written a most excellent memorial article, which, with the illustrations used in connection with it, makes it by all odds the best and fullest sketch yet published of the world's most extensive bee-keeper and honey-producer.

It was our privilege to meet Capt. Hetherington at the Buffalo National convention some years ago. We never had a personal acquaintance with him, but we have always felt that it was extremely unfortunate that a verbatim report of his address at that meeting was not taken. If we remember rightly, he told us some very interesting history, especially touching the early work of the lamented Moses Quinby and Rev. L. L. Langstroth, in connection with their bee-keeping.

The brief tributes to Capt. Hetherington, written by others who knew him, will also be read with interest.

For the use of the engravings showing Capt. Hetherington's first and last load of bees, as well as the one showing his damaged sword, and also the one on the first page, we are indebted to Gleanings in Bee Culture. All the others are new ones, made especially for the article in this issue of the American Bee Journal.

Newspaper Facts (?) About Bees.

It seems just a bit strange that to have facts about bees correctly given it is almost an absolute necessity that the one giving the facts must be one having a speaking acquaintance with the busy little creatures. Wm. E. Curtis, a veteran newspaper correspondent, one of the ablest in the world, gives this in the Chicago Record-Herald:

"Bees and other insects are very important agents in the fruit and flower business. The big yellow and black bumble-bee, as we call it, is almost essential to the production of fruit and flowers. We could scarcely get along without him. Almost all flowers and fruits must be cross-fertilized—that is, pollen must be brought from one to the other in order to produce, and this work is chiefly done by wild and tame bees. As an illustration, the bumble-bee is a native of this country and does not appear in Australia. Down in Australia they had no clover because they had no bees. The bees not only get a great deal of honey from the clover blossoms, but they fertilize them in the act of getting the honey. Hence, as soon as our bees were imported into Australia and set to work in the fields the clover began to grow and has developed there as well as here or any place else", said Mr. Maclatt.

As a matter of fact, orchards would go on just the same if every bumble-bee were dead; at the time of fruit-bloom bumble-bees are too few in number to make any material difference. "Down in Australia they had no clover because they had no bees". "Error!" the bill": they had clover; they had bees. Several kinds of clover, several kinds of bees. They lacked red clover and bumble-bees. Red clover grew just as well without bumble-bees as with them; but all the seed had to be brought from elsewhere until bumble-bees were present to fertilize the blossoms.

Candying or Crystallizing of Sugar and Honey.

A neat little pamphlet that seems to be issued by the Michigan Bee-Keepers' Association contains this statement:

"Remember that sugar never candies, it crystallizes, and this fact alone should be sufficient proof of the purity of any honey that is candied solid."

Will the correct use of words justify the statement that sugar never candies? The definition of the verb *candy* in the dictionary begins with the words, "To form into crystals of sugar"; and under the word *candied*, "candied sugar" and "candied honey" are both given as examples. Manifestly it will not do, then, to say that sugar never candies, especially as candy is commonly made of sugar.

But is there not a difference in the appearance of candied honey, as compared with sugar, that may easily be described? Who can put in words just what that difference is?

Disposing of the Honey Crop.

Judging from the reports of the various leading markets, and also from the fact that there seems to be quite a quantity of honey still in the hands of the producers, the question of disposing of the honey crop is just about the liveliest subject now before bee-keepers. It isn't a question of keeping more bees, but how can the one who has just a few bees sell his crop of honey at even a reasonable price?

We believe that in many cases bee-keepers themselves must be their own salesmen, at least until some organization decides to do some combined honey advertising in the daily and other newspaper press of the country. The dear public needs to be informed of the great value of honey as a health-giving food, in the same way as it is told of the various breakfast foods. The demand for honey must be *created first*, then there will be scarcely any trouble to dispose of all that can be produced, we believe.

This is a live, practical, up-to-date subject. What about it?

Shaken Swarms in Australia.

From the Australasian Bee-Keeper it appears that our antipodal friends differ from us in their views and practices with regard to shaking swarms. The editor says:

"There seems to be some variance of opinion as to what a shaken swarm is. I have always understood it to be a sufficient number of bees and a queen taken from a colony by means of shaking them from the combs, to found another colony."

Chas. U. T. Burke gives his method of procedure as follows:

"Prepare a hive of empty combs, or frames of foundation, leaving room for two frames, one with eggs just hatching, the other with fresh pollen and honey. Have a young laying queen on hand. Go to one of your strongest colonies, shake fully two-thirds of the bees into a new hive (after finding the queen and placing her aside). Drop your laying queen among them, sprinkle all very slightly with water sweetened with honey, place the hive on a fresh stand; the swarm will go to work in a few days, and in a week will be bringing in a surplus of honey. I have never had a failure this way, nor have I had any swarm out. I always leave the frame of brood with them,

as it encourages the bees to work well, and the queen to lay almost immediately. Do not use much smoke, either in artificial increase or shaken swarms. With the latter I prefer to use none at all, as it appears to confuse them, causes balling of the queen, and sometimes causes the shaken swarm to take flight, and thereby cause much delay."

Two other correspondents give their method of procedure, and all agree in putting the swarm with the queen on a new stand, leaving the brood on the old stand. The difference between that and the common practice here is somewhat radical. The Australian plan divides the colony, putting the swarm on a new stand. The American swarm is left on the old stand. Indeed, it might be said that no swarm is made; the brood is merely taken away, with few or no bees. The Australian swarm, according to Mr. Burke, "will go to work in a few days, and in a week will be bringing in a surplus of honey". The American swarm will go to work immediately, or, rather, will not stop storing. The Australian gathering-force is divided; the American kept together. In a long season may not the divided Australian force do the more gathering? But may not the Australian mother colony swarm again in too many cases?

Is There a Bee-Supply "Combine" or "Trust"?

This question was asked of us just recently. Also, we were requested to name those manufacturers and dealers who are not in the "combine" or "trust".

Not being aware that there is a trust or combine among bee-supply manufacturers and dealers, of course we couldn't possibly say who are in it, or not in it.

While it may be true that the same class or grade of goods is priced the same by more than one dealer, it would not necessarily follow that there is a combination or trust. For instance, a certain style of honey-extractor may be priced exactly the same in the catalogs of several manufacturers and dealers. This might be true, and is true in at least one case, as a certain kind of extractor is made only by one firm, and several others handle the same extractor. So, of course, the price on it would be the same in the catalogs of all the firms handling it.

To readers of the American Bee Journal we would suggest sending for the catalogs of all the best firms advertising in it, and then order from the ones that you believe will give you the best and most satisfactory goods for your money. Of course, you might consider distance, as that would likely influence freight-rates a little.

A good thing to remember is this: Sometimes the cheapest goods at the start are the dearest in the end.

You pays your money and you takes your choice. So runs an old saying.

Miscellaneous News Items

Mr. F. H. Drexel, one of the leading bee-keepers of western Colorado, called on us a few days ago. His young son was with him. They were on their return journey from Maryland, where they visited Mr. D's old home, which he left some 13 years ago for the great alfalfa honey-fields of Colorado. Mr. Drexel, like some other bee-keepers in hat State, produces honey by the car-load.

To Missouri Bee-Keepers.—We have received the following letter from R. A. Holekamp, of St. Louis Co., Mo., with the urgent request that it be published at once, so that Missouri bee-keepers can act upon it in time to accomplish the desired object:

The Missouri State Bee-Keepers' Association at its convention last September, passed resolutions to introduce to the State legislature at its present session a Bill for the enactment of a foul brood law and the appointment of an inspector of apiaries.

In both branches of the legislature now in session at Jefferson City, has been introduced a Bill for the appointment by the Missouri State Board of Agriculture of a State inspector of apiaries to aid and assist in the development and protection of the honey industry, and especially for the eradication of an infectious disease known as foul brood.

The Bill has been drawn up with care, and will, when passed, be a great help to the honey-producers of Missouri. So it is of importance that every bee-keeper in this State, who has the welfare of the honey industry at heart, write to the Representative from his county, and Senator from his district, or any other member of our legislature he may be acquainted with, *at once*, urging him to work and vote for the passage of this Bill.

If these letters come in at Jefferson City in large numbers, they will show that the bee-keepers want this Bill passed, and it will also show that the bee-keeping industry of Missouri is of some importance.

There are in Missouri, according to the United States Census of 1900, 41,145 bee-farms, with 205,110 colonies of bees. It produced in the year 1903 over 6,000,000 pounds of honey, which shows that Missouri is one of the great honey-producing States of the Union.

It is necessary that the bee-keepers who will assist in getting the Bill passed shall write the letters to the members of our legislature *without delay*, as the hearing of the committee on the Bill will be before may days.

Let all progressive bee-keepers unite their efforts and work for the passage of this Bill, and thus get the assistance of our State Board of Agriculture in developing the bee-keeping industry, and protecting our apiaries against infectious diseases which are now spreading over the State.

ROBT. A. HOLEKAMP,
Assistant Secretary Missouri State Bee-Keepers' Association.

The Humming of the Bees.

BY HARRY LATHROP.

There's a deal o' solid comfort—
Call it nonsense if you please—
In that pleasant homelike music—
Just the humming of the bees.

Though we sport in winter weather
With the cold and with the snow;
Though we sit by cosy firesides
Where the cheerful embers glow,
While we read our books and journals,
Lay our plans and take our ease,
Still we long to hear the music
Of the humming of the bees.

When the fragrant apple-blossoms
Hang in clusters pink and white;
When the plum-trees by the roadside
Almost dazzle with their light;
When the gentle summer breezes
Murmur soft among the trees—
It is then we hear the music
Of the humming of the bees.

Crawford Co., Wis.

H. K. Beecham, of Grand Traverse Co., Mich., called on us last week. He has been a bee-keeper since 1879, and has taken this Journal for the same length of time. He put 64 colonies of bees into winter quarters last fall, from which he harvested about 5000 pounds of honey, mostly extracted. Mr. B. has no trouble to dispose of all his crop either in his home market or near home.

Our Advertisers, as a class, we believe can not be excelled for reliability and square dealing. We invite our readers to patronize them as generously as are your needs. Please do not fail to mention having seen their advertisements in the American Bee Journal when writing to any of our advertisers. It will help both them and us, and so both they and we will greatly appreciate such mention.

To Illinois Bee-Keepers.—Secretary Stone, of the Illinois State Bee-Keepers' Association, desires that at least our Illinois subscribers shall read the following:

The secretary of the Illinois State Bee-Keepers' Association gets numerous letters (so many in fact that he can not give them personal answers) like these:

"I keep only a few bees, and it would not pay me to belong to the State and National Associations."

"What are the benefits to be derived from being a member of your Association?"

"I have only a few bees, and I can find a home market for all my honey; there is no foul brood in my part of the State, and I do not need to advertise, so what benefit would I get from belonging to the State and National Associations?"

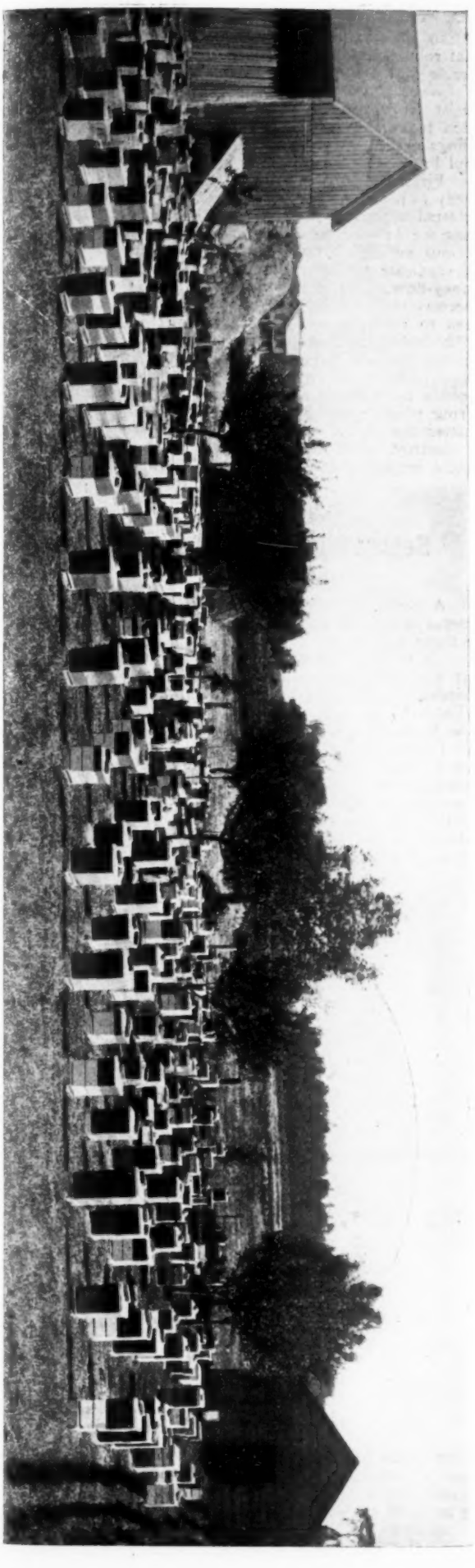
As secretary of the State Association, and a member of the executive committee, I just want to put a few questions to the men who are the writers of such letters as are quoted above.

Have you ever taken a thought of what the Illinois State Association has been trying to do from year to year ever since its organization, to make it profitable for you to keep your "few colonies" of bees? and to keep out all diseases of bees, that it may be made *possible* for you to keep them?

Have you ever thought of our efforts, combined with those of the National and the bee-papers, to put down the adulterators of honey that have flooded the market, and thus make it possible for you to sell your honey without a suspicion of its being adulterated?

Do you know that we have secured to the State Association a foul brood law the past two years, and have strong promise of one for the

Wintering-Cellar and Apiary of 300 Colonies belonging to John F. Otto, of Calumet County, Wisconsin.



Wintering-Cellar and Apiary of 300 Colonies belonging to John F. Otto, of Calumet County, Wisconsin.

next two years, whereby you can be instructed (free of cost) as to treatment of your bees in case of foul brood?

Do you know that a membership in the National protects you (in the right) from a neighbor who might through envy or otherwise, declare your bees a nuisance? And no charges to you but your membership fee and one-half the costs.

Have you ever thought of the lives of our good men, that are being spent to publish the bee-papers just in the way that will instruct us most? And have you ever begrudged the little dollar a year you gave them for their papers?

We could ply many more questions on these lines, but we do not believe bee-keepers as a class, if they knew it, would hold back the simple fee of $1.00 that gives them membership in both the Associations named, and in that way support the institutions that help to make their interests successful.

Our next Annual Report (the 4th) of about 200 pages, will be out in several weeks, and the larger membership we can show in that the better our prospect, when we go before the Legislature, of a successful appeal being made.

With all kindness to my brother bee-keepers,

I am, sincerely yours, JAS. A. STONE, *Sec.*

Contributed Special Articles

Comb Honey and Separators—Foul Brood.

BY PROF. A. J. COOK.

I was much interested in the answers to inquiries in the last American Bee Journal. In the production of honey I always took most delight in working for the comb. It always seemed to me that nothing was more beautiful than a perfect specimen of clear white comb-honey. This is specially true when the combs are uniform, smooth and well-filled. I have succeeded many times in securing whole supers where every section was almost perfect, and this without the use of separators at all. I think this usually comes when the colonies are very strong and the harvest is bountiful. The bees seem to rush the honey in to the hive, and if sections are put in either with starters or full sheets of foundation these are carried on together and uneven combs are rarely produced.

I often found, however, quite a different state of things. Some of the combs would be thicker, and there would be a general lack of uniformity. Indeed, this unevenness was so great, or frequent, that in my own experience I decided that it was never wise to strive to get along without the separators. I did not find it mattered much whether these were of wood or tin. While this was true in my own experience, I have known some bee-keepers who are astonishingly successful in securing these almost perfect sections without exception, yet these persons never used separators at all. Thus I was led to say that it was possible to get good sections without separators, but that I found it better to use them. I was much interested to find how many there were who, like myself, found they could not produce satisfactory results without the use of these valuable aids in comb-honey production.

Indeed, I have always considered that the securing of a fine crop of excellent comb-honey, each season, was the best test of skill and proficiency in the art of bee-keeping. Almost anyone can secure extracted honey, and, for the novice, or the one who does not study to attain the best in the art, it is perhaps always wisest to work for extracted honey. The advantages in working for comb honey are: A much more beautiful product—and there is much joy in producing the beautiful; the producing of that which brings a much higher price in the market; and the fact of knowing that we have reached the highest skill of the art. The two handicaps in comb-honey production—I might say three—are, frequent failure, always securing a much less quantity, and the fact that it is much more difficult to ship comb honey.

The California bee-keeper finds this last point one that materially concerns him. He must ship car-loads of his honey for thousands of miles. In case he produces extracted honey, he can do this with no fear of loss or disappointment. This alone will always make extracted honey a favorite with the apiarists on the Pacific Coast. The difficulties in the way and the invariably lessened production makes it imperative that we secure at least double for comb honey that which we might expect for extracted, the quality being the same in each case.

The requisite as I take it, to the best success in the

comb-honey production is to have our colonies very strong at the dawn of the season. This may, and often will, require stimulated feeding. I would always have the supers in place at the very commencement of the honey-flow. It is an advantage also if the swarming is past for that season. In case

PROF. A. J. COOK.

the latter is not true, we can attain the same results by working for very strong colonies. If necessary, we can unite to accomplish this.

I do not think that any one who works for comb honey can afford to dispense with foundation. I always reach the best success with thin foundation, and while I often use full sheets, I do not find that this is necessary. Neither did I ever find very great advantage in using starters both above and below, in the section.

In case the apiarist produces extracted honey exclusively, there is little to be said except, of course, it is always desirable to keep one's colonies strong and in the very best thrift. I do think, however, that it is generally best not to extract until the bees commence to cap the honey. No one can ever afford to put thin or unripe honey on the market. Such honey is very apt to ferment. It always lacks body, and is always deficient in flavor. It is true, however, that I have produced very excellent extracted honey, which I removed from the combs before it was ripened. But in this case, it was kept for a long time in a warm room, in rather shallow vessels, and thus evaporation continued even after the honey was taken from the comb. The evils arising from marketing unripe honey are so great that no one can ever afford to be guilty of such misdoing.

FOUL-BROOD LAW IN CALIFORNIA.

We are having quite a controversy in two or three counties of California over the matter of bee-inspectors enforcing the foul-brood law. We probably have as excellent a law as any State in the Union. This law makes it the duty of the Supervisors, upon the receipt of a petition of a certain number of bee-keepers, to appoint a foul-brood inspector, whose duty it shall be thoroughly to inspect all the apiaries of his county, and in case foul brood is present to eradicate it. The inspector is well paid, and, as the supervisors have no object to do other than the best for their constituents, competent men have usually been secured.

The difficulty in the matter comes from the fact of our "off years" in this State. The past season there was no honey gathered at all in most localities. Men who are not very well informed regarding foul brood are loth to pay for treatment when they see no chance for gain ahead. The inspector, too, knows how ready bees are to rob from each other when no honey is being gathered; knows also how dangerous it is to work with bees at such times, from the fact that robbing is so likely to be induced, and so is quite likely to decide that he will do nothing at all; and he finds the most of his bee-keeping friends are quite willing that he should desist from treatment. We should remember, however, at such times that the possibility—nay, probability—of robbing brings great danger into any community where there is any foul brood at all in existence.

First, the enforced idleness of the bees makes them ever ready to plunder the other and weaker colonies. The colonies infested with foul brood are almost certain to be weak, and thus we have every condition for the rapid spread of this serious malady. It seems to me it is much the wiser course to eradicate the disease entirely during this let up of the honey-flow. Yet it is certainly true that the foul-brood inspector must exercise very great caution or he will get the bees to robbing, and surely make a bad matter worse. It is, however, perfectly easy and practicable, by spreading a canvas beneath the hive, and surrounding the latter by a good bee-tent, to make all necessary examination with no trouble from bee-stings, no danger of robbing, and no scattering which would otherwise induce robbing and very likely scatter the germs of the fell disease which it is the purpose to destroy. Just two things are necessary: A wise, competent inspector, and most careful manipulation.

Los Angeles Co., Calif.

Separators Nailed to Wide Frames.

BY G. M. DOOLITTLE.

A correspondent wishes me to give my views on wide frames with separators nailed to them, and closes his letter in these words:

"Is this not as good as anything I can have? And cannot the separators be cleaned of propolis as easily as can wooden separators, even the new fences, as they are called? Please tell us of these matters through the American Bee Journal."

I have used wide frames with separators nailed to them for the past thirty years, and so far I see no reason for changing my surplus arrangement. During this time I have been trying everything that has been advocated as better than the above; but after a careful testing of each and all, I have every time come to the conclusion that, for me, nothing is as good as *tin* separators nailed to wide frames. And,

G. M. DOOLITTLE.

as my honey has always brought as much as, or a cent or two more a pound than, the biggest market quotations, I see no reason why I could secure better prices were I to change my mode of securing surplus.

After a careful experimenting all along through these years,

I am satisfied that the claim that tin separators have a tendency to less work in the sections, and a decreased yield of section honey, is unfounded. I have used sections without separators and separators of five-sixteenths mesh wire-cloth, so that the cluster of bees would be broken up as little as possible, where separators were used, and at the end of many careful experiments I failed to see any greater production of section honey with either of these, than was obtained with the tin separators. I know that the theory put forth in favor of an unbroken cluster seems reasonable, and from such theory it would appear that a less yield should be the result where separators were used, but the cold facts with me say that all such reasoning is fallacious.

Then, I use wide frames on account of the great advantage they have in that the bees do not have access to the outside of the sections at any point, except the edges of the horizontal pieces above and below the separators, and here there is very little stain or bee-glue used. Hence, when the sections are filled and finished, they are nearly as new and perfect as they were when put on the hive, requiring very little, and often not any, scraping to clean them of propolis or bee-glue, as it is often called by many apiarists. This is no small item, as all of our older bee-keepers know, who have spent days, if not weeks, in cleaning sections so they would be in presentable shape for market.

From the honey obtained from basswood, the sections come out of these wide frames almost as clean in all parts as they were when put on the hive; and no large amount of work is required where the honey is from buckwheat, at which time there is more propolis carried in and daubed about the hive than at any other time of the year.

That this cleaning of sections is no small item will be seen from the many section-cleaners which were invented and advertised a few years ago, many of which are still in use. These find no place with the apiarist who uses properly-constructed wide frames. Yes, more: All the expense required in constructing one of these section-cleaners, or in buying one, is entirely saved by using such wide frames.

More, still: All the time required in using them can be taken for the improvement of the mind in reading, etc.; going to some summer resort and hearing some of the best talent in the world; or, if nothing else seems of more importance, the time saved can be used to go camping or fishing, if one is so inclined; and with me, either or all of these seem to meet my requirements better than spending days and weeks in cleaning sections with a section-cleaner or without one.

As to inventing section-cleaners, I have no discouraging word to say, for in the inventing of anything the mind is improved, and a certain joy comes, which is often greater than any that can be experienced in going fishing, etc. I would not discourage inventive genius in any way, for, when used aright, it is not only a help to the world through the invention, but a help to the world also by making the inventor a greater man or woman, socially and intellectually.

As to the ease of cleaning separators, I am not much interested where tin is used; for, to my knowledge, I have cleaned mine only once, and many of them have been in use for from 25 to 30 years. In using the wood separators in conducting my experiments, I found that the bees daubed them to a much greater extent than they did the tin ones. But this was not my reason for discarding them, but was because they did not answer their purpose as well, when used in connection with wide frames, as did the tin. It is possible that if I were to live in some of the localities of the South and West, I might find reasons that would change my views from the above; but for all sections where white clover, basswood and buckwheat are the chief sources of honey, I firmly believe that there is nothing better to use in securing our section honey than wide frames with tin separators.

Onondaga Co., N. Y.

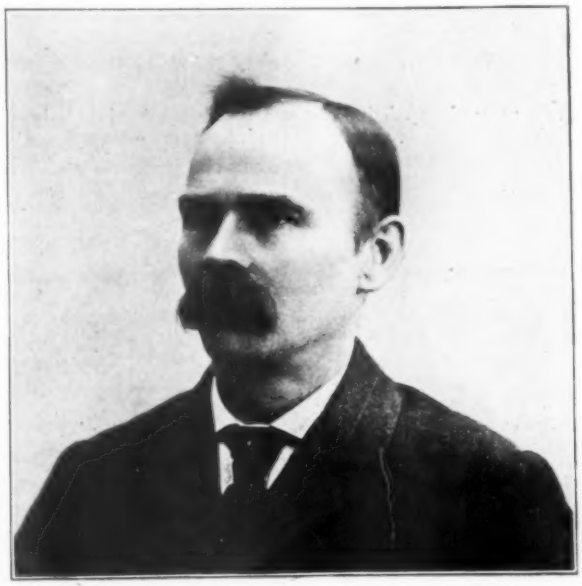
Cellar-Wintering of Bees and Its Difficulties.

BY F. GREINER.

In this locality of New York State, wintering bees in the cellar gives us the best results with the least worry. We learned a dear lesson last winter, viz.: It is safer to place bees in their winter quarters early than defer it till December. Even though that nestor, Rev. Dzierzon, has said: "Do not worry about the bees even should it freeze and snow before you put the bees in." About Christmas, he thought, was a good time. The difference in the climate may have something to do with it; perhaps if Dzierzon had such winters to contend with as we here, he might have given other advice.

If I am informed right, the German beekeepers have so far had a mild winter up to Christmas, almost no freezing weather. With such weather it would not matter so much whether the bees were cellared a month later than we practice. The reason why I deem it wise to put in our bees early and before freezing weather is, hives and combs are dry; hives are not frozen down to the hive-stands and may be carried in without disturbing the bees very much. Bees need no cleansing flight during November; they are even loth to improve an opportunity in December, and thus I can see no reason for keeping them outdoors at a risk. Imagine the state of affairs when taking in hives that are icy, the combs freezing cold. You bring them to the cellar into a warmer and humid atmosphere. What will be the effect? The hive and combs would soon be dripping with water, a condition to be avoided by all means. We might wait for a warm spell before we carry the hives in; but supposing that spell does not come, as was the case last winter; what then?

It is quite evident for this climate the best policy is to



F. GREINER.

get the bees in early. Some of our best bee-masters advise not to take all the colonies out at once and put them on hive-stands sufficiently far apart to prevent any mixing up—in other words, scatter them about over the yard. I have never noticed serious results to follow from this mixing up. Particularly with an out-yard far away, this method is not practicable, and I do not hesitate to put the whole bunch out in one night, about April 15. When the bees warm up in the morning, of course, everything that has legs and wings is out. I always try to be on hand as soon as the bees have become quieted down, and close up the entrances to about one inch in width. On a day following—preferably when it is real cool—I clean the bottom-boards or exchange the filthy ones for clean ones. The majority of bottom-boards are usually clean enough.

Sometimes it occurs that after putting the bees out on the summer-stands we have a heavy fall of snow, with bright, sunshiny weather to follow. This is unfortunate, for if bees come out under such conditions many will be lost. They become dazed and fly right into the snow where they will die. Something will have to be done at once to keep the bees in the hive as long as is safe without worrying them. Having a great many colonies to see to, it would be impracticable to cover up the snow with sacking, canvas, straw, etc., as may be done in case of a house-apiary, or where but few colonies are kept. The bee-keepers in Germany are sure to do something of that sort, but with us this is out of the question. The best we can do is to bank up our hives with the snow and keep the bees thus confined till the snow has

become heavy and wet. In this condition it is not the death-trap that it is when light and dry. A strong and vigorous bee can well rise from heavy snow.

In addition to banking up the hives one might sprinkle ashes, dust, sawdust, or something similar, on top of the snow around the hives to modify its glariness. It is the strong white light from the new snow that blinds the bees;

View of Mr. Greiner's Apiary in April, 1904.

subdued as spoken of, it does not prove so detrimental.

The accompanying picture shows the condition of my bees as they were April 21, 1904, myself in the act of kicking the snow against the hives. I hope such a time will not occur again this year; to mention it may prove a help to someone—may save some faithful bees.

Ontario Co., N. Y.

Mr. Hasty's Afterthoughts

The "Old Reliable" seen through New and Unreliable Glasses.
By E. E. HASTY, Sta. B Rural, Toledo, Ohio.

THE NATIONAL A BENEFICENT ASSOCIATION.

Among Manager France's recommendations I think the most valuable to be this one: "Keep together; compromise; keep out of court." An association that should encourage members to "law it" when they might abstain (and would if they were not members) would be sadly something else than a beneficent association. .Page 9.

ENCOURAGING NATURE STUDY.

How nice that the educational authorities of a great state like Wisconsin should encourage young people—and people not so young—in nature study! How nice that they should help inquiring ignorance by naming books to be read! How nice in them to make bees a separate department of nature! Then, after getting our feelings up thus high, what pathos is this that we wind up in, what tumble from the stars into the mud? No mention of the great and scholarly works of Cowan and Cheshire, Langstroth and the Manual, and A B C, all omitted, and a long list of half-chaffs and out-of-dates named. Verily this is a queer world. Still I suppose the most important thing for us to remember is that it is worse than useless for us to subject that official to sarcasm and contemptuous remarks. Nemesis will overtake him; and *sometime* a more reasonable list will appear. Page 12.

NEW REMEDIES FOR BEE STINGS.

We're always ready to hear of a new remedy for stings (as long as the different substances on earth hold out); but it rather jarred us to have a doctor propose to dope us three hours before we get stung. As the editorial suggests, perhaps it's all right for amateurs not yet inured. Page 19.

TO SEPARATOR OR NOT TO SEPARATOR?

Another example of how the world moves, we have in Question 20. We used to have lots of lively fighting in behalf of separators—sheer waste of good cash—mark of a green operator. Now only 2 out of 26 unqualifiedly advise doing without them—yet one of that forlorn two hints that people that need them are green. Some of the replies are unusally illustrative. Comrade Pettit says: "Some of us used to do it, but the standard is higher now." Also notable is comrade Stone's experience at the Chicago World's Fair. Only a little over 600 pounds out of 2,300 would case without rubbing. Yet I ween some of the combatants of 30 years ago would have described that identical 2,300 pound lot as all right except just a few combs. Page 20.

THE HIVE QUESTION AND SUGGESTIONS.

I licked my lips with anticipation over that new and best hive of Allen Latham's—and, lo, a "long idea" hive adapted to chunk honey only! Still, if you want to post a small out-apiary in June, and never look at it again till at your convenience you take it away in the fall—just getting some honey that would otherwise be lost—and getting it very cheaply so far as expenditure of time is concerned—quite likely there is something in the idea. And it's a scheme a shade different from the ordinary out-yard idea. Worth thinking of in bed some night. Page 21.

"RED CLOVER" BEES AND QUEENS.

Thanks to C. P. Dadant for giving the "red clover" bees and queens a mild cuffing up all 'round. If we really had such a strain of bees it would be all right to recognize them—but then the size of that "if!" And a good laugh over that sample of red clover honey that tasted strongly of *basswood* will do us no harm. Page 22.

EXPERIMENTING IN APICULTURE.

Prof. Scholl is some like behemoth who trusted that he could draw Jordan into his mouth, if he thinks he can do Uncle Sam's census work over after him. But all right—we need just such enterprising spirits to tackle just such big jobs. I believe we have heard before that Texas was at the lead in honey production—that is, years when the California season was bad and her own good. Getting on a semi-desert cattle-range 40 miles from a railroad station for the sake of a good and vacant bee-range, is bidding quite high for it, indeed. Even at that high price it's possible that some determined comrades will bid. Page 25.

Honey as a Health-Food.—This is a 16-page honey-pamphlet intended to help increase the demand for honey. The first part of it contains a short article on "Honey as Food", written by Dr. C. C. Miller. It tells where to keep honey, how to liquefy it, etc. The last part is devoted to "Honey-Cooking Recipes" and "Remedies Using Honey". It should be widely circulated by those selling honey. The more the people are educated on the value and uses of honey the more honey they will buy.

PRICES, prepaid—Sample copy for a two-cent stamp; 50 copies for 70 cts.; 100 for $1.25: 250 for $2.25; 500 for $4.00; or 1000 for $7.50. Your business card printed *free* at the bottom of the front page on all orders for 100 or more copies. Send all orders to the office of the American Bee Journal.

Some Facts About Honey and Bees.—This is the subject of an article written by Mr. J. E. Johnson, and published on pages 581-82 of the American Bee Journal for Aug. 25, 1904. We have republished it in 4-page leaflet form for general distribution, and furnish it, postpaid, at 35 cents per 100 copies. Send all orders to the office of the American Bee Journal.

Maple Sugar and the Sugar Bush, by Prof. A. J. Cook; 44 pages; price, postpaid, 30 cents. This is by the same author as "The Bee-Keepers' Guide," and is most valuable to all who are interested in the product of our sugar-maples. No one who makes maple sugar or syrup should be without it. Order from the office of the American Bee Journal.

Why Not send in some new subscriptions for the American Bee Journal? Samples free for the asking.

Capt. J. E. Hetherington: Bee-Keeper, Inventor, and Soldier

Written by P. H. ELWOOD, of New York.

THE subject of this sketch would have gained distinction in any occupation, for he was endowed by Nature with boundless energy and indomitable will-power, coupled with organizing and executive abilities such as would have quickly placed him at the head in any large undertaking. His power of comprehending the whole was no less remarkable than his ability to grasp at the same time the minute details of an extensive business. Had he at maturity engaged in some extensive industrial operation, such as railroad construction, mining, or manufacturing, undoubtedly success would quickly have been his with its attendant wealth; but long before this, while yet in his teens, circumstances and inclination led him into a new and untrodden field—that of making bee-culture a specialty—a separate and successful branch of agriculture.

At this early date there were no bee-books nor bee-papers; no movable-comb hives, no honey extractors, no bee-smokers, no comb foundation—nothing in fact to warrant the average bee-keeper to believe that bee-culture could be made a separate and independent business. Yet Capt. Hetherington believed it could be done, and made it a specialty from the beginning, being first, I think, to depend entirely upon the sale of honey and wax for his livelihood, and the maintenance and upbuilding of the business.

His intimate friend and co-laborer, Moses Quinby, always regarded him as the ablest exponent of modern bee-culture, and as pre-eminently the one to demonstrate to the world that bee-keeping as a business could be made as uniformly successful as any other branch of agriculture. How well he has done this a faithful history of his life should recite, but no one can tell of the time and energy, and money, spent in reaching this result, nor can any one ever fully know of the discouragements that befell him before his efforts were crowned with success.

John Edwin Hetherington was born in Cherry Valley, N. Y., Jan. 7, 1840, and died in the same place Dec. 31, 1903. He came of a good ancestry, his father being an educated English gentleman; his mother a member of the old Judd family of Connecticut. The father dying when the youngest of the three brothers was less than a year old, Master John less than three, the entire care and training of the three children fell upon the mother, and the highest tribute we can pay her is to point to the characters developed in her sons. All three were in the military service during the war for the preservation of the Union, and they came out as they went in, with spotless reputations and characters, and abstainers from the use of tobacco and strong drink—gentlemen in thought, word, and deed.

Capt. Hetherington bought his first colony of bees when 12 years old, with money earned for that purpose. The thorough-going business methods of the mature bee-keeper

Capt. Hetherington's First Load of Bees.

were foreshadowed in the care taken in bringing home this first colony. The old family horse is put before the large spring wagon, and is driven by a member of the family. For the additional comfort and security of the colony of bees, the hive is suspended in a sheet, the ends of which are tied over a springing pole, while the ends of the pole rest on the shoulders of the two older brothers, who sit facing each other, as shown in the engraving. This extra care seemed necessary for the colony that was destined to contribute so much toward bringing apiculture from the dark-

Capt. Hetherington's Home, with Last Load of 32 Colonies of Bees.

ness of superstition into the full light of modern science. In contrast to this is given a picture of one of the later loads of 32 colonies. On one side is seen the family residence, while on the other side is the first honey-house and shop, with the barn in the rear. At the back of the well-kept lawn are a couple of wintering-cellars, one of which is shown in another engraving. The bee-yards, spring and fall, are near the cellars, and cover acres of ground. For some years back no bees have been kept at home during the summer months, thus avoiding all annoyances to neighbors.

The boy bee-keeper had good success, and within five years he had marketed honey by the ton, and had secured an average of nearly 60 pounds of honey in glass boxes from his entire apiary. He was a close observer and quick to adopt improvements. Before he had been in the business a half-dozen years he had perfected a double-walled hive with a chamber of confined air between, and had applied for a patent on the same. On thorough trial he discovered that while warmer for a while this double-wall prevented the sun from drying out the moisture, and the hive soon became damp and consequently cold. He made 600 of these, and mechanically they were probably as perfect as hives can be made. Not finding the double-wall satisfactory he next put his bees into straw hives, the last of which were made to take the Quinby size of the Langstroth frame. This was about the time of the commencement of the Civil War. The box straw-hives were excellent for winter and spring, and better suited to the requirements of the bees at other times than the hives previously used. They were not of the usual straw-hive shape, but had flat tops as shown in the picture, and were well adapted to boxing. They cost nearly $2.00 apiece, and at one time he had about 1400 of them.

With the immovable-comb straw-hive he adopted a system of artificial swarming by driving that was so successful that often he had not a single natural swarm from an entire apiary.

Previous to this he had in use swarm-catchers for issuing swarms. These were placed before the old colonies and held the clustered swarms until the apiarist could get around to hive them.

After a trial of the movable frame the Captain found he could not do without it, but in his trial he made the important discovery that the colonies in the straw-hives with

the Langstroth frames did not winter or build up in the spring nearly so well as did the others whose combs were built against the sides of the hives, leaving no spaces at the ends of the combs. He therefore adopted the newly-invented Quinby hive, after materially assisting in perfecting the closed-end frames of the same. And after an experience of many years with both open and closed-end frames, he repeatedly assured me that he decidedly preferred the Quinby frame to anything else.

A part of his Virginia bees were put in the Van Deusen metal-cornered self-spacing frames, but those he cared for himself were kept in his own frames.

No new invention ever entered the apicultural world but that Capt. Hetherington noted it, and, if valuable, he adopted it. The honey-extractor was his as soon as it crossed the Ocean, and he used it ever after, believing it to be one of the greatest inventions and one of the most useful articles in the apiary.

He very hopefully followed up the invention of comb foundation from the beginning, and experimented with it four or five years after the date of Wagner's patent, obtaining his samples from a Mr. Steel, of New Jersey. The invention came from Germany, as perhaps did also the samples. It was only a midrib without any attempt at cell-walls, and was a failure, but lacked only Yankee ingenuity to make it a success by giving it side-walls. He was quite enthusiastic at the time of receiving the first handsome

Two of Capt. Hetherington's original straw-hives over 40 years old. Wall about 3 inches thick. One at the right is the Langstroth movable-comb, while the other has no frames.

sample from the Weiss machine, but, alas! he did not then know that it was made of paraffin, nor did he at first observe that the cells were intermediate in size between worker and drone. The queen was slow to use this size cell except when the foundation was convex or stretched so that the cells were enlarged, when she very freely deposited drone-eggs in them. Noticing this fact, he saw the necessity of making and keeping the cells of proper size. To prevent sagging he tried cloth, paper and wood centers, all of which were objectionable.

Finally, in 1876, he incorporated fine wires into the wax sheet from which the foundation was made, and met with complete success. Several years before this Mr. Quinby and himself had made a complete comb of very thin tin coated with wax. This was tested in midwinter, Capt. Hetherington bringing bees into a warm room for the purpose, and although the cell-bottoms were flat, it was freely used for rearing brood and storing honey.

In the manufacture of comb foundation it was found that impressing the rhomboidal bases upon the wax sheet would lay bare the wires unless a wasteful quantity of wax was used. To avoid this he left the cell-bottom flat as in the tin comb, thus also economizing in wax and simplifying its manufacture.

Previous to the invention of flat-bottomed foundation he had persistently refused to use natural-base foundation in his honey-boxes, as he was unable to make or buy any that would not leave an objectionable fishbone in the honey, and he did not wish to sell to others what he would not use on his own table, or what would injure the high reputation his honey had gained. With flat-bottomed foundation 12 to 14 feet to the pound, he was able to produce comb honey that, on the average, had a more delicate center than that built wholly by the bees.

In 1888, Mr. Cowan, president of the British Bee-Keepers' Association, and the most illustrious scientific exponent of bee-culture in Great Britain, searched in vain for foundation or fishbone in Capt. Hetherington's honey. The next day he visited a neighboring bee-keeper and found the objectionable hard center in his honey, although he had used no thicker natural-base foundation than 10½ feet to the pound. Certain it is, that until the advent of the so-called "new process" Weed foundation, the flat-bottomed had no rival in the production of fancy comb honey. Capt. Hetherington's patent covers all kinds of wire supports for foundation, whether imbedded in the foundation as made or consisting of supporting wires in wired frames to which the foundation is later attached in various ways, and he should be recognized by the bee-keeping fraternity as the inventor of all wire-supported foundation. This is one of the greatest inventions of modern apiculture. Without it we could hardly use comb foundation in the brood-chamber, or newly-built comb in the extractor. And the flat-bottom wired foundation as used by Capt. Hetherington is probably also the cheapest way in which to use such supports. It substitutes machine-work, which is cheap, for hand-work which is costly and scarce. It saves wax, because being better supported it can be made lighter. It saves brood, since by the usual method of attachment there are hundreds of cells in every hive crossed by bare wires, and other hundreds or thousands of cells so stretched because of insufficient support that the queen does not use them for brood-rearing. The loss yearly from this cause may amount to enough to buy wired foundation. Capt. Hetherington was a skilled mechanic, and until within a few years ago made all of his own supplies, including hives, sections, packing-cases, honey-extractors, box-making machines, etc. Even the three dozen wheelbarrows used in his out-yards were made by himself. The material was usually prepared ready to put together at a mill five miles from home. To this mill he went daily with his men, arriving at daybreak and returning after dark. This, kept up for weeks in the cold winter weather, was indeed a strenuous life, and told heavily on a constitution impaired by army life and disease; but so energetic was he that he would have continued it longer had not the importunities of family and friends prevailed.

His hives, sections, cases, etc., were models of perfection and neatness. His packing-cases were of the whitest basswood he could find in the forest, papered inside, with the sections resting on cross-cleats—the style now so widely advertised as the "no-drip" shipping-case. The editor of Gleanings, in an appreciative article, gives him credit of being not only the originator of this, but also of the tall section and super-spring for holding them in place. He was among the very first to adopt the section-box, and his first were made to contain a comb taller than the brood, and the sections were held in place by the flat super-spring now coming into general use.

In 1874 he made a shipment of comb honey to Great Britain, being the first sent abroad in quantity. At the Centennial in 1876 his exhibit of 3500 pounds of honey in single-comb sections, together with a variety of ornamental packages of honey and wax, was admired by all visitors. The exhibit was built up to represent the turreted front of an old castle, so arranged as to permit the light to pass through in the freest manner, the whole surmounted by the flag under which he fought for three long years. The highest award was given him—a medal and diploma. A like award was given him at the Columbian Exposition at Chicago in 1893. The wording of this diploma by his friend Secor—"For great skill in the apiarian art, and taste in preparing its products for the market, this exhibit is exceptionally complete in every particular"—was very gratifying to Capt. H.

He also received an award on comb honey at the Pan-American Exposition at Buffalo.

For many years past Capt. Hetherington has been recognized as the most extensive bee-keeper in this country. Sixteen years ago Mr. Cowan, editor of the British Bee Journal, after traveling through nearly all bee-keeping countries, wrote that at Cherry Valley, N. Y., he "met the most extensive bee-keeper in the world". That year his colonies numbered 3000, located in 22 out-yards, from 2 to 12 miles from home. The fall of 1903 he went into winter with 2200 colonies, 600 of which were placed in the cellar in one day.

After adopting indoor wintering he moved all of his bees home in the fall and away again in the spring. To avoid this extra work, and for other reasons, he, some years ago (1889), established his Virginia apiaries. The season of 1903 he had more bees there than in this State. The shrinkage in numbers here was owing to the devastations of black brood, which, to quote Capt. Hetherington, "Is twenty times as bad as foul brood". One of the means lately used to fight this disease has been the introduction of Carniolan queens, which, on account of their prolificness, keep up the strength of the colonies even though quite a percentage of the brood dies of the disease. He had previously been well pleased with this race in his Virginia apiaries, where he introduced them for the purpose of carrying on brood-rearing during the usual summer dearth of honey there. Their good disposition and wintering qualities were found as represented, while as gatherers of buckwheat honey they proved to be ahead of the yellow bees.

Perhaps no incident in his life better illustrates certain characteristics of the man than does the establishment of his Virginia apiaries. His brother Oliver, of Michigan, through a friend had become informed as to the bee-keeping resources of the Shenandoah Valley in Virginia, and during a visit to his old home had canvassed with the Captain the advantages of keeping bees where the honey was all white, and where they could be wintered safely unprotected on the summer stands. A few days after the Captain was in Virginia, when he soon concluded this would be a favorable spot to locate the natural increase of his business. And a most prominent characteristic of the man was that after making up his mind to do a thing he did it without delay. His executive abilities were equal to any task in hand.

In this case he resolved to locate a thousand colonies of bees in Virginia in time for the fall flow of honey, which commenced in two weeks. He wired home, ordering lumber for the hives and castings made for the Van Deusen frame-corners, into which he transferred the bees. The hives had to be built complete from lumber in the rough, and given two coats of paint. The bees were in various out-apiaries from 2 to 12 miles from home. These had to be hauled in and transferred, comb and bees, into the new hives (putting 2 colonies together for extra strength), and then a little time given the bees to unite the comb for a thousand-mile journey.

The writer, in ignorance of his undertaking, happened over for a visit when he was in the midst of his preparations. He briefly explained his plans, but when it was proposed that the visit be postponed to a later date, he emphatically refused to entertain the proposal, saying he had nothing to do but oversee his men, and as each had his day's work assigned him, he did not expect much interruption. Twenty-nine men were at work that day. Every man had his place. There was no bustle nor confusion, and everything went off like clock-work. The bees were moved nearly on time, what delay there was being caused by others not in personal touch failing to do their part promptly.

The management of the large number of colonies kept by Capt. Hetherington has necessarily always been in a systematic, wholesale way, to which we may fairly apply the word *extensive* rather than *intensive*. In order that this system of management might apply to all alike, his bees were carefully equalized early in the season. In a good many of the details of his business, however, the word "intensive" might very appropriately be applied, for in the mechanical perfection of his supplies and appliances of all kinds, in the careful looking after the welfare of each individual colony, in the supersedure of old or unworthy queens, and in the neatness and order displayed in every branch of his business, even to the minutest detail, he far surpassed the average keeper of a dozen colonies. So well did he look after the details of his business that it was almost impossible to inquire for any implement or article used or remnant left but that he could tell where it was.

As soon as possible after giving the bees a flight in the spring they were moved to the out-yards, after which they were visited as often as necessary, or about once in nine or ten days during the honey-gathering season, unless special work like queen-rearing required a more frequent visitation. A plot of ground was rented on which to set the bees, and to each yard was moved a small sectional bee-house and a wheelbarrow. No one looked after the occasional swarms issuing, for, as the queens' wings were clipped, such swarms would return.

For some time after adopting the new Quinby hive, he labored with Mr. Quinby to prevent swarming by giving shade, young queens, and plenty of room in surplus and brood apartments of the hive; and in 1868 he succeeded in preventing all increase from the 150 colonies then under experiment. What worked well in one season, however, did not succeed in all, and it was not until he practiced removing the queen that he was entirely successful in controlling swarming. After the advent of black brood it was discovered that removing the queen was also beneficial in checking this disease.

View of Capt. Hetherington's first Wintering-Cellar. The roof covered with a foot of earth and then a board roof. The stones shown are for the new cellar.

More than a score of years ago he adopted the T clamp with the one-pound section. At first his honey was all in glass, but of late years he shipped it unglassed, much in paper cartons.

In the fall the bees were carefully looked over, and all those lacking in bees were rejected. Some seasons as many as one-third were thrown out.

In connection with his last attempts at outdoor wintering, he experimented quite largely with plaster of Paris as a material for bee-hives, it being an excellent non-conductor of heat, and a good absorbent of moisture. He soon discovered that in common with the absorbents heretofore used, in proportion as it became saturated with moisture, it lost its non-conducting properties. He, therefore, after a most thorough trial with almost all kinds of hives, and all kinds of packing material, abandoned outdoor wintering as unsuited to his severe climate, where a five months' confinement to the hive without a flight is occasionally experienced.

Winters like that of 1903-04 would cause disastrous losses. In the high mountainous region in which Cherry Valley is situated, successful wintering has been the most difficult part of bee-keeping, as the honey-bee is indigenous to warmer climates, and when removed to long winters it does not bear confinement well, unless every condition is perfect. Both on account of climate and of the poor quality of the late stores sometimes gathered in this locality, the wintering problem was the last one to be solved by Capt.

Capt. Hetherington's new Bee-Cellar. Ventilators are large and open all the time. Also openings in the floors over the bees which are open except in the coldest weather. He believed in abundant ventilation for bees.

Hetherington, and the solution of this cost him a mint of money and a score of years.

For the last dozen years he wintered his bees as well as farmers winter any kind of live stock. A year ago he took

out one lot of bees numbering over 800 colonies without finding a dead one.

As for honey, he has for years past been as certain of getting a paying crop as the farmer has been of getting a crop of anything else dependent upon the weather. During his lifetime he produced a greater quantity of honey than any other bee-keeper that ever lived. He found bee-keeping depending upon luck for a passing existence; he left it a specialty founded on the rock of science, the peer of any branch of agriculture. No one ever labored more, no one

Part of Capt. Hetherington's Bee-Yard in the fall, waiting for the cellar.

ever sacrificed more, no one ever accomplished more, toward this result than did Capt. J. E. Hetherington.

Captain Hetherington was one of the founders of the Northeastern Bee-Keepers' Association (now the New York State Association), one of the oldest, if not the oldest, organization of its kind in the country; and after the death of Mr. Quinby, its president. He was also present at the organization of the National society, and later elected president. At one time he was associated with Mr. Quinby in giving addresses on bee-keeping before farmers' clubs in some of the towns of central New York. He had a good command of language, and was a clear, forcible writer and speaker, and it is to be regretted that time and inclination did not permit him to make a more frequent use of his gifts in this direction.

Socially, and as a host, he had no superiors and very few equals in the fraternity, and many who read this will testify to the excellent treatment received at the hands of himself and his accomplished wife. His naturally excellent conversational abilities were improved by cultivation. His stock of anecdotes was large, and drawn upon almost wholly as apt illustrations of the various points under discussion, while his army life was so eventful, and his memory so retentive that from this source alone he could entertain and instruct by the hour.

At the camp fires of his G. A. R. Post he was looked upon as chief entertainer, and he was very successful in getting the old veterans to live over again, for a short time, their old army experiences. At a late public gathering of the Masonic Lodge of Cherry Valley, of which he was past-master, he was somewhat unexpectedly called upon to act as toast-master. His remarks on this occasion, the last time he was at a public gathering, were said to have been uncommonly brilliant and eloquent.

The citizens of his historic, native town have long held him in their highest esteem because of his sociability, his high intellectual and moral worth, and particularly because of his splendid military record. Nothing ever came up for the benefit of Cherry Valley but that Capt. Hetherington used his rare executive abilities to help it along. It was he who secured the organization of the Board of Trade in the nick of time to obtain the location of the most helpful industry of the town. He was also foremost in procuring a site for a summer park and recreation ground on the shores of Otsego Lake. And no one labored harder than he for the splendid public water supply of this town—an honor to this small village and a monumental work to those who conceived and carried the project through to completion.

Capt. Hetherington thoroughly enjoyed his home life, while his happy, hopeful, resourceful spirit made him the light of an affectionate household. He leaves a wife, a son, and a daughter. The son, recently married, has inherited his father's stirring activity and much of his executive ability. A younger son died 15 years ago, when a little more than 4 years old.

Capt. H. was an active temperance worker, and for many years a member of the Good Templar order. He was a regular attendant of the Presbyterian Church, of which his wife and daughter are members. He was also an officer and worker in the Sunday-school. He believed in a religion of a practical, working kind that bears immediate fruit, that raises the fallen, feeds the hungry, cares for the sick; and he was a living exponent of that religion, as many persons have testified since his death. At the same time he believed in the Divine side of religion, with duties beyond those to our fellowman, and with privileges and enjoyments and helps not found elsewhere. One of the last quotations he made was from a favorite poem—Tennyson's "Crossing the Bar":

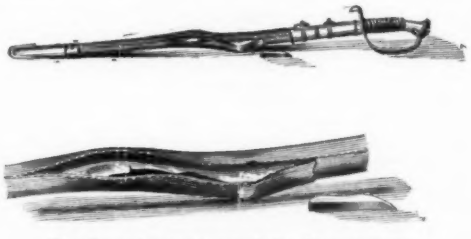
"For tho' from out our bourne of Time and Place
The Flood may bear me far,
I hope to see my Pilot face to face
When I have crost the bar."

Eminent comrades have testified that as a soldier J. E. Hetherington had few equals. It was from no boyish freak, but from a deliberate sense of duty that on Oct. 12, 1861, he enlisted in Company D, 1st Regiment, U. S. Sharpshooters, Col. Berdan commanding. The spare time of the summer before had been spent in target rifle practice, and his mother had made his underclothing previous to enlistment. His bee-business at this time was the most extensive in the land, but it and his life, if necessary, were ready to be sacrificed when his country was in peril. Before the second year had passed, of nine intimate friends from Cherry Valley who had entered the army, four were dead, four discharged for disability, and Capt. Hetherington alone remained in the service. Truly, to quote Gen. Sherman's epigram, "War is hell".

Gen. Sheridan says, "Courage measures the power the mind has over the body". The Captain stood at his post in a most dangerous branch of the service, when most men would have been in the hospital or discharged for disability. His army surgeon has left on record the following to his bravery:

"On May 12, 1864, at Spottsylvania, he became very much exhausted by reason of chronic diarrhea, but declined being relieved from duty; and although wounded in the head, he heroically remained in command of his company." And, again: "On June 22, 1864, in action before Petersburg, Va., he received a serious wound in the hand, which disabled him from duty. At the time of receiving said wound he was suffering from chronic diarrhea, and was so weak and debilitated by it that he was a better subject for the hospital than the battle-field".

This was the wound he received when his sword was shattered by a bullet, and a piece of the weapon driven through his hand. The engraving shows this piece lying by the broken sword. The portrait shows the position of the sword and hand. He had thrown his rubber blanket across the hilt of his sword, and that over his shoulder. Providentially, the bullet, so accurately directed, found a lodgment in his sword and hand instead of his heart, which lay just beneath. Major Gen. Wilkenson, of the British army, on seeing this sword, said that he had seen many of the heirlooms of prominent British families, and the relics sent home from 20 years of active service, and then added, "Among them all there are none that I consider so fine a personal relic as this broken sword". The Captain threw



The Sword which saved the Captain's life.

this away as being of no further use, but it was preserved by his men. He also received a gunshot wound in the shoulder in the second battle of Bull Run, Aug. 29, 1862.

Entering the army a private he came out a captain in that branch of the service where the command of a company meant in some ways as much as the command of a regiment in other parts of the army. The captain of Company D was killed in the battle of Gettysburg, July 3, 1863, and Lieut. J. E Hetherington was recommended for promotion by Col. Berdan from the battle-field. At the close of the

Gettysburg campaign an order was sent to the commanding officers of the army to report to the Secretary of War the names of such officers and men as had distinguished themselves for bravery and meritorious conduct during the campaign. The name of J. E. Hetherington appears in this list, and furnishes the best of proof that his promotion was well earned.

Capt. Hetherington during War Times; the position of hand and sword when struck by the bullet.

Before an engagement, an officer transfers to his darkey or servant all luggage—retaining only his rubber blanket and haversack, for use in case the aforesaid gentleman fails to put in an appearance after the fight. His blanket is made into a small roll and tied at the ends, then carried across his shoulder and breast as a sash is worn. In hot weather this is oppressive; and for temporary relief, although in the midst of a hard fight, the captain had thrown his rubber across the hilt of his sword, and that across his shoulder.

While in the army the Captain was in all the principal battles of the Army of the Potomac, and since, when he joined the Comrades of the Battle-Field, the affidavits of others revealed the fact that he had been under fire 114 days, thus exceeding the requirements of this strictest of strict organizations by 24 days. He was discharged from the service Sept. 20, 1864, by reason of disability from wounds received in action. For two years after it was a question whether he would live, but he gradually regained the larger part of his former vigor. The chronic army disease from which he suffered never fully left him, and at last, after extreme prostration from the grip, ended his life.

In personal appearance the Captain was tall and commanding, and looked every inch a soldier. But for his youth, undoubtedly higher rank and still greater honors had come to him while in the army. Had his health permitted him to remain in the service at the close of the war, and take a West Point course, as was suggested, he could have filled with credit any position in the army. He had resources to meet any emergency; executive ability to carry through any undertaking; will-power that would not be defeated, and a comprehensive mind that grasped the entire situation and strategic points of a battle-field. His description of the battle of Gettysburg clearly showed that, young as he was, he comprehended the situation and movements of the two armies. As a commander he gained the confidence and enthusiastic support of those under him.

The bee-keepers of this country may feel honored that they have had enrolled in their ranks one who as a citizen, bee-keeper, and soldier has contributed so much to the welfare of his fellowman. The world is better for such lives. Good deeds live on forever in continual multiplications, hastening the glad day when all evil shall be overcome by good.

True heart, that beat so brave, and true and strong,
Then failed him first who never failed his friend;
True hands, that always could their succor lend
Where Need was born of Want or cruel Wrong;
True lips, that gave the courage of a song
To fainting souls who would the Right defend,
Throughout the way until he found its end;
Farewell! And if the way, perchance, be long,
Unlighted by his loving, genial smile,
We still may walk it, weary mile on mile,
With surer Faith, and always willing feet,
Because of heart, and hands, and lips, that went
So far with us, and such rare presence lent,
And wait, Somewhere, our coming soon to greet.

—A. A. HOPKINS.

A Few Tributes to the Memory of Capt. Hetherington.

We wish to give, in addition to what Mr. Elwood has told so well, several appreciations of Capt. Hetherington from personal friends and those who valued his efforts in different lines. One of them, from Maj. Chas. J. Buchanan, was sent to us by Mrs. Hetherington, who accompanied it by the following note:

MR. GEORGE W. YORK—

Dear Sir:—Among the letters of sympathy I received was one from an army comrade who had been a member of the same Company during the entire time of my husband's service, and with whom there has been a warm friendship ever since—Mr. Charles J. Buchanan, a well-known lawyer of Albany, N. Y. It expresses such a true and just appreciation of my husband's character that I thought you might like to include a portion of it in your memorial number. I send you a copy which you can use at your discretion, or not at all, as you think best. Yours sincerely,

EVA B. HETHERINGTON.

A portion of the letter referred to by Mrs. Hetherington reads as follows:

From Major Chas. J. Buchanan, of New York.

So passes away my most intimate friend and comrade of the Civil War. Our acquaintance commenced in November, 1861, and continued unbroken until his death. He was a soldier by instinct. Manly, courageous, brave and honorable, he easily met and sustained himself through all the vicissitudes of army life. No demand was ever made upon him to which he did not render more than full equivalent. There was a charm and dignity in all that he did.

He was always kind and generous to others, even to the detriment of his own self-interests. His high sense of duty was never lacking in any conviction or emergency. He never demanded of his associates as much as he exacted of himself. His theory and practice were to do just what he believed to be strictly right, always leaving to those with whom he came in contact to act from the same standpoint.

Any one who gained his confidence, was always his intimate.

I always knew, without asking, where he would stand upon any question where the facts involved were undisputed.

He would go out of his way to benefit his surviving comrades, never waiting for his assistance to be solicited.

Take him all in all, he was one of the noblest specimens of manhood that I ever knew. He could, when necessary, reprove as well as commend, but such censure, when he gave it, was to admonish rather than to reproach.

There was no guile in his nature. Frankness and the utmost sincerity characterized his every action. His motives were always pure. His line of conduct through life

was marked by that standard of excellence which was born in him, and which he never sullied nor disgraced.

He has gone to his reward, which I doubt not will be commensurate with his aims and ideals in this life.

If he had any motto it was this: "Forward, as occasion offers. Never look around to see whether any shall note it. Be satisfied with success in even the smallest matter, and think that even such a result is no trifle".

Sincerely yours,

CHARLES J. BUCHANAN.

From Mr. L. C. Root, of Connecticut.

MR. GEORGE W. YORK:—A most cheerful and gratifying task is accorded me when I am asked to join in the praises of my good friend, Capt. J. E. Hetherington.

I think I may say that few people outside of his own family knew him better, or had a better opportunity to judge him accurately, than myself. He was intimate from boyhood with the Quinby family, to which my wife belonged.

In writing of Mr. Quinby, Capt. Hetherington said: "I went to him as a mere lad for instruction in bee-keeping".

I first met him at Mr. Quinby's, quite early in the morning after a 16-mile ride. I well remember his enthusiasm at that time. This marked enthusiasm characterized his whole life, whether in business, social, army, religious, or home circles.

His business interests in bee-keeping were probably the largest in the world, and his success was marked, though his life was characterized by generous impulses and deep interest in the higher walks of life. Whatever he did, he did well. Few men have done more accurate and faithful work than he, or shown greater cheerfulness and nobleness of purpose.

L. C. ROOT.

From Prof. A. J. Cook, of California.

It is certainly a pleasure to voice my feeling of esteem and respect for our friend, the late Capt. Hetherington. It was my pleasure to meet Capt. Hetherington at the home of his brother, whom I knew more intimately than I did the Captain, and also at some of our National conventions. A feeling of strong admiration was the result of this all too slight acquaintance. Indeed, I think Capt. Hetherington had many points in common with his brother, who was one of our honored Michigan bee-keepers. These gentlemen seemed to have rare inventive genius. We all know that some of our best implements in bee-culture, especially the honey-knife, owe much to the Hetheringtons. They seemed to have that rare faculty that divines things which as yet have had no existence. It was never my privilege to visit the large apiaries of Capt. Hetherington. I am sure that, could I have done so, I should have seen there what I saw at the Saginaw apiary of his brother, many ingenious helps that I should have carried away to aid me in my own work among the bees.

Another peculiarity of the Hetheringtons was their neatness and method. Like our friend Bingham, they could not abide dirt, which simply means things out of place. No wonder Mr. Bingham and the Hetheringtons were brought together. We all know about "birds of a feather". I am sure that at the large Hetherington apiaries we should have seen system and method supreme. Without doubt this was no mean factor in the success of Capt. Hetherington in the extensive work which he carried on among the bees.

But the best characteristic of Capt. Hetherington, as of every true man, was his courtesy, thoughtfulness of others, and exceeding probity and honor. One had to be with him but a very short time to recognize the fact that he was with a gentleman who valued truth and honor as of highest worth. Such men honor any business or profession. It is very rare that I learn of the death of one whom I knew no more than I knew Capt. Hetherington where I feel such a burden of loss as came with the sad words that our friend had passed into the Beyond. Great souls are none too common in this world, and when they leave us we all—the world itself—are poorer.

A. J. COOK.

Maple Sugar and the Sugar Bush, by Prof. A. J. Cook; 44 pages; price, postpaid, 30 cents. This is by the same author as "The Bee-Keepers' Guide," and is most valuable to all who are interested in the product of our sugar-maples. No one who makes maple sugar or syrup should be without it. Order from the office of the American Bee Journal.

Doctor Miller's Question-Box

Send Questions either to the office of the American Bee Journal, or to Dr. C. C. MILLER, Marengo, Ill.

Location in Virginia or Maryland.

Would Virginia or Maryland be a good location for starting a bee-yard? WISCONSIN.

ANSWER.—There are good locations in both States, but it will probably need personal investigation to find such locations not already occupied. Sometimes there are bee-keepers in good locations who are willing to sell out, and a short advertisement might reach them.

Size of 10-Frame Hive—Depths of Rabbets.

1. What are the outside dimensions of a 10-frame hive?
2. How deep should the frame rabbets be when one intends to use tin rabbets and the Hoffman frames? I intend to make the hive-bodies and buy the tin rabbets and the frames. WISCONSIN.

ANSWERS.—1. I think the usual dimensions are 20 inches long, 16 wide, and 9½ deep. That, however, leaves no room for a dummy. If I were making them I should want them ⅝-inch wider, so as to have room for a dummy.

2. Three-quarter inch.

Keeping Bees Near a Lake.

1. Would bees be likely to do well near a large body of water, or would they be likely to fall into the lake?
2. On which side of a lake would you prefer to keep bees—the east or west side? WISCONSIN.

ANSWERS.—1. The water is not likely to do any harm, only it is just so much surface without any pasturage, just like so much barren land. If the body of water was so narrow that the bees would cross it to get pasturage on the other side, a few bees might be beaten down in crossing by high winds.

2. The side that had the best pasturage.

Prevention of Swarming—Reducing Rearing of Young Bees in Honey-Flow.

1. For the prevention of swarming is there any objection to the use of perforated zinc at the entrance, other than that it hinders the passage of the bees?
2. Is it an advantage or a disadvantage (in a short honey-flow and severe winters) to have the production of young bees reduced to say one frame during the honey-flow (swarming season)? ONTARIO.

ANSWERS.—1. It makes the hive warmer in hot weather, and imprisons the drones so that they die in the hive unless liberated by the bee-keeper. In some cases it may prevent a young queen from taking her wedding-flight.

2. In the majority of cases it would be a disadvantage.

Races of Bees—Cutting Out Queen-Cells—Wintering.

1. I am sending you a few worker-bees, which I picked up from the front of the hive. Are they Italians, blacks, or hybrids?
2. How do you cut out queen-cells when the supers are on the hives? Do the supers have to be removed every time, and, if so, doesn't this put the bees back with their work?
3. Last fall I put the bees into winter quarters as follows: On top of the frames I put a few strips of wood ¼-inch thick; on top of this a few thicknesses of cloth; on this about 4 inches of leaves, and a dry-goods box over the hive. Today they had a flight, and there seemed to be a good

many bees still in the hive. Last fall the hive and all weighed about 75 pounds. How do you think they will winter?

4. I have a bee-book dated 1887, called "A B C Guide to Bee-Keeping," by W. B. Webster. Did you ever know this man? ILLINOIS.

ANSWERS.—1. When they got here they were of the smashed variety, making it hard to tell much about them. I think one has one yellow band, making it a hybrid. The other may have three yellow bands, and no one can tell whether a single three-banded bee is pure Italian or hybrid. If all in the hive are three-banded, they're Italian.

2. Yes, the supers are lifted off to get into the brood-chamber, and of course that disturbs the work of the bees, but not very much.

3. As far as can be judged from description, they ought to winter well.

4. I knew one bee-keeper by the name of Webster, but I'm not sure he is the man. [It is a book written by a bee-keeper over in England, and has been reprinted in this country. Scarcely any bee-keeper in America would use the implements and fixtures illustrated in it, and, besides, they could not be bought here.—EDITOR.]

Wintering bees in a basement.

1. How would it do to winter bees in the basement of a brick building where the temperature is 22 degrees above zero when it is 18 below out-of-doors? The air is absolutely pure. The building is 36 x 60 feet. It has a center wall which divides the basement. There is a furnace in one part of it, which is fired up once a week, raising the temperature to 55 degrees above zero. I am wintering 15 colonies of bees in the other part. I put them in Dec. 12, and they are doing nicely so far.

2. Do you think they would winter better out-of-doors? IOWA.

ANSWERS.—1. If the bees have done well up to the last of January, it would seem reasonable to expect still further success. On general principles it would not seem desirable to have a repository range from 22 to 55 degrees, but if it does not touch the lower figure very often, generally ranging in the neighborhood of 45, it may do very well.

2. Likely not.

Increase—Honey-Drinks—Wintering Out-Doors.

1. Which is the more profitable, forced or natural swarming when running for section honey, and when increase is desired?

2. Can a good alcoholic drink be made with honey? If so, how?

3. How much air-space must be allowed to keep the bees from smothering in outside wintering, when the temperature goes as low as 10 degrees below zero? MISSOURI.

ANSWERS.—1. Depends upon the person; with little experience natural swarming is best; with sufficient experience something else may be better.

2. I've had no experience in that direction, and would rather throw good honey away than to make it into an alcoholic beverage.

3. The entrance should amount to something like two to four square inches, depending upon the strength of the colony.

Best Hive—Detecting Queenlessness.

1. As there are no bee-keepers in this vicinity using patent hives (nothing but the box-hives), I would like your advice as to the kind and size to buy. The main source of honey is white clover.

2. I heard an old bee-keeper say that he could tell when a colony was queenless by the actions of the bees. I asked him how, but he would not tell. Can you tell me? IOWA.

ANSWERS.—1. You will probably be well suited with 10-frame dove-tailed hives. If you are working for comb-honey, 8-frame hives may do better, but even in that case it is better to have 10-frame hives unless you expect to give your bees a good deal of attention. There is much more danger of starvation in winter with the smaller hives, if they do not have close attention.

2. I don't believe there is any way to tell whether colonies are queenless without looking in the hive, although a pretty good guess may be made when a colony is carrying in very little pollen when others are carrying in much. If a colony has just become queenless, you may see the bees running about at the outside in an anxious way.

Drone-Comb Required in a Hive.

How much drone-comb does an 8-frame hive require? CALIFORNIA.

ANSWER.—If you allow no drone-comb whatever, you will probably have all the drones needed, because the bees will manage to get drone-comb into some corners in spite of you. Yet it is better to encourage drones in one or more of your best colonies (not the ones from which you rear queens), suppressing them in others. Mr. Doolittle's plan is good. Allow one or two square inches of drone-comb in each colony whose drones are to be suppressed, so as to prevent them from building drone-comb: then every two or three weeks shave off the heads of the drone-brood.

Improved "Frost-Proof" Hive.

I have been interested in bee-culture for the past two years, and am contemplating increasing considerably my apiary the coming season. This will necessitate the purchasing of additional hives. I have heretofore used only dovetailed hives, but a gentleman who has invented and applied for patent on a hive is desirous of furnishing me with his product. He makes a hive which is fastened at the corners by a metal device, which he claims to be a great improvement, as the hives can be knocked down at any time; it is frost-proof; and requires no nailing to put together. He also claims he can make them out of basswood instead of pine, as his manner of joining the corners prevents warping.

In your experience have you found that being able to take the hives apart at any time is of importance? and what do you think of adopting this hive? I can see that it is much easier to put together than the dovetailed pattern, but if you can see any reason why it would be unsatisfactory in any way, I do not want to invest to any great extent. ILLINOIS.

ANSWER.—I know nothing of the particular hive in question except what you say, but on general principles you may feel pretty safe in saying that 9 out of 10, if not 99 out of 100, of supposed improvements are anything but improvements. Just now I cannot think of any advantage there would be under ordinary circumstances in having a hive capable of being taken apart. The only advantage I can think of in any case would be to take the hives apart so as to pack them in less space, but that would apply only to unoccupied hives. The corners of a basswood hive may be held against warping, but would that prevent shrinking and swelling, so as to keep the brood-chamber always of the same depth? A "frost-proof hive" in northern Illinois sounds like a fairy tale.

Stimulative Brood-Rearing—Feeding Bees—Leasing Ground for an Apiary.

1. What is the most satisfactory way of stimulating brood-rearing in the spring?

2. Is not extracted honey and sugar syrup mixed the best feed when it is fed warm?

3. What should be the proportions?

4. In feeding is it not better to have all the hive-bottoms perfectly tight, and raise the front somewhat higher than the back end, pouring the syrup in at the entrance?

5. Can you give a form of agreement in regard to leasing ground for locating an apiary?

6. Should the land-owner be bound to protect the apiary from thieves and stock so far as he is able to do so? WEST VIRGINIA.

ANSWERS.—1. The most satisfactory way for me is to see that the bees have plenty, yes, more than plenty—abundance—of stores, keep them well closed up, and then let them entirely alone. If your queens are not so good at laying as to do their best without the lash, or if your locality is such that you have good flying weather without any pasturage,

then it may pay you to feed half a pound of diluted honey every other evening, or to change end for end the outside comb on each side.

2. It is not so good as solid combs of sealed honey.

3. It's like the rule for the proportion of oats and sawdust for good horse-feed—the less sawdust the better. In many cases, however, sugar syrup must be fed when honey enough is not to be had, and then one-fifth honey is better than pure sugar. Sugar alone does better for a winter than for a spring feed.

4. I have fed many a colony in that way, and it worked well, only for some reason that I did not understand quite a few dead bees were carried out next morning.

5. I'm not a lawyer, but I should think all that would be necessary would be a writing saying that such a piece of ground was to be leased for such a time for such a consideration.

6. Not unless it was so specifically agreed, in which case the consideration should be correspondingly greater.

Best Foundation to Use.

What kind of foundation is better to use for brood, light or medium? Also what kind is better in supers for extracting? Which is the better cell, the round or hexagonal? CANADA.

ANSWER.—It matters little which kind of cell, or whether light or medium for either brood or extracting frames, only the light foundation needs to be better supported than the medium.

Bees Noisy in the Cellar.

It is 64 days since my 21 colonies were put into the cellar, some of them nuclei and some real strong. The room is 12 x 14 x 5 feet deep, 3 feet under and 2 above. I have a furnace in the cellar, but there is a double-wall partition between the bees and the furnace, and the temperature is always at about 45 degrees. The cellar is dry, cool and sweet, with good outside ventilation when required, and a chimney runs from the cellar up.

Three of the strong colonies are always more or less noisy, and I do not understand why. Each hive is raised one inch from the bottom-board, and has a cushion on top. At one time I let the cold air in and the temperature went down to 32 degrees, then it gradually went up to 55, and finally down to 45. I let them alone for days at a time, thinking they would quiet down, but that same noise is always heard more or less, while the others are very quiet. The entrances are not spotted, and so far only a few bees have died.

Would it be better to take them out and leave them out when the weather is warm enough? ILLINOIS.

ANSWER.—It is not easy to understand just how much noise those bees make. It is possible that they are dangerously noisy, and it is possible that the noise they are making may be safely kept up all winter. The strongest colonies may be expected to make more noise than the others. It might do better to take them out and leave them out, but likely not. You might try giving them still more ventilation below, or a very little above.

Italianizing Bees.

I have 11 colonies of black bees. I wish to increase as much as I can this year, and would also like to Italianize, or change to better stock. At the same time I wish to interfere as little as possible with the honey crop, which comes here in June, July and August. I notice on page 225 of "A B C of Bee Culture" a plan which says to purchase a choice breeding queen in the spring or summer, not to remove the old queens until the summer crop of honey is stored, and instead of natural swarming take frames and make nuclei, giving them queen-cells from Italian brood.

Where will I get the queen-cells? Is it not possible that the Italian colony will not have any queen-cells in it at the time I want them? Would it be necessary for me to make the Italian colony queenless at about this time? TEXAS.

ANSWER.—You cannot be certain there will be queen-cells in your Italian colony when you want them, but you can make it more likely by giving occasionally a frame of brood from other colonies to your colony with the choice queen. Thus building it up strong you will be likely to have queen-cells early enough. But to make sure of them, look through the hive about 10 days before you want to use the ripe cells, and if you find no cells started you must make the colony queenless. Take out the queen with 2 frames of brood and adhering bees, and put them in an empty hive on a new stand, adding from some other colony a frame or two of honey, and filling up the hive with frames filled with worker foundation. A week later let the 2 hives swap places, for by that time the cells will be sealed, and the nucleus with the old queen being put on the old stand will get all the flying force. You can cut out and use the cells 9 or 10 days from the time the old colony was made queenless.

"Good" Candy Made with Granulated Sugar.

I have made some "Good" candy, using granulated sugar. After I had it made I noticed that the recipe called for pulverized sugar. I have no way of pulverizing the sugar. Will it make good feed as it is? ILLINOIS.

ANSWER.—The granulated sugar will make good feed, only it will be rather extravagant, for the bees will be likely to throw out the coarse grains. I don't know of any way to pulverize granulated sugar, unless to borrow the druggist's mortar and pestle; but you ought to have no trouble in getting pulverized sugar from your grocer.

Shaken Swarms—Rearing Queens.

I started last spring with one colony. It cast a fine swarm, but as I do not have time to watch them during swarming time, I did not see it come off. It was leaving an appletree when I saw it, and in spite of all I could do to save it, it went off to the woods. I bought 3 colonies last summer, so I have 4 in the cellar at present.

I would like to make 8 colonies out of the 4 this coming season, and get as much surplus honey as I can, besides. My bees are blacks, and I want to Italianize at least 2 colonies. As I have not time to watch them and they are not situated very close to the house, if I allow them to swarm naturally I will be likely to lose them, so I have been trying to plan some suitable method of artificial swarming. The bees are in movable-frame hives, but owing to crooked combs and brace-combs, they are practically immovable. So it would be almost impossible, especially for an inexperienced bee-keeper, to find the queen to clip her wings, or in case of Italianizing to destroy the old queen before introducing the new. I have read considerable during the past year, in bee-books and bee-papers, about shaken swarms, and from the methods given have been trying to arrange one to suit my case. I will outline it and ask your advice as to its suitability or practicability.

I thought to purchase four 10-frame, 2-story Langstroth hives (for extracted honey), with Hoffman frames, and fill them with full sheets of foundation in both stories. Order 2 Italian queens in time to have them about the first of the honey-flow from white clover, as it is about the first that yields any surplus. Then when honey is coming in freely, put the new hive with full sheets of foundation and an entrance-guard to prevent the queen and drones from going in, on the old stand; shake all the bees but a few to care for the brood in front of the new hive, and let them run in; catch the old queen at the entrance-guard, and put her back in the old hive, removing it to a new stand. Give the new colony an Italian queen. I would have to give the 2 new colonies for which I have no Italian queen, the old queen, and let the old colony rear a queen for itself.

A neighbor bee-keeper who has had considerable experience, and to whom I was telling my plan, thought it would work all right, and said a good way to get the bees out of the old hive was to place an empty super on top, smoke the bees good, then drum on the sides of the hive from 10 to 15 minutes, when all the bees would go up into the empty super, and could then be shaken in front of the new hive.

1. Do you think the plan would work all right?

2. Would I need to wait until the bees were preparing queen-cells for swarming to shake them, or would it be all right to do it as soon as there is a good honey-flow coming

in? (It would be hard for me to find queen-cells without removing the frames.)

3. Would you put the cage with the Italian queen in the new hive before letting the bees run in or immediately after?

4. If worker foundation in full sheets is given will the bees rear any drones?

5. What grade of foundation should be used in the brood-chamber? In the upper story for extracted honey?

6. Would colonies shaken in this way be likely to swarm again?

7. Are queens that are reared by the bees after their old queen is removed (when this has been done previous to the forming of queen-cells) likely to be all right? Are they as good as those reared under the swarming impulse?

8. If so, would it be all right after a colony is properly Italianized, to remove the old queen and give it to a queenless colony, and let the then queenless one rear a new queen?

9. If this will not work, will you please give me a simple method by which an inexperienced bee-keeper could rear queens from an Italian colony to supply any colonies which may be left queenless, or to improve his stock?

CANADIAN.

ANSWERS.—1. Yes, with some modifications mentioned in following answers:

2. You can shake, without waiting for queen-cells, as soon as colonies are *strong enough* in a good honey-flow.

3. I wouldn't put her in the new hive, but in the old one. Her reception will be more kindly, and the broodless bees will be much better satisfied with their old queen.

4. They will be likely to build a few drone-cells in odd corners, and of course rear a few drones.

5. Medium brood, unless you support the light brood well.

6. Not likely.

7. Yes and no. As you propose to manage, I wouldn't expect the best of queens.

8 and 9. Your colonies, in the way you propose, wouldn't be strong enough, and having no field-workers would be in too discouraged a condition. You will be all right if you take the queen (with perhaps one or two frames of brood and bees) from a strong colony with its full working force at a time when honey is yielding well.

Feeding Bees in Winter—Punic Bees.

New Hampshire lost most of her bees last winter. My 9 colonies died on the summer stands.

I bought a new supply last spring, and put 7 colonies in the cellar the first of January, this year, having waited in vain for 6 weeks to give them another flight. My cellar is not a good one for bees. The temperature is 35, and it is sometimes wet in the spring or during prolonged thaws in the winter.

Several of the colonies are small in numbers, and all are deficient in stores. They are in two-story dovetailed hives, the upper story empty, and inch blocks under the front corners of the hives.

I commenced feeding "Good" candy a week ago, giving each colony a piece about the size of an orange. Today I cleaned out about a half-pint of dead bees, on an average, from each hive, and found on the bottom-board under each ball of candy as much powdered sugar as it took to make the candy.

1. Was the candy too sugary?

2. A neighbor of mine who is an old bee-keeper, says he has successfully fed bees in winter with thick syrup, in fruit-jars covered with thin cloth and inverted over the cluster. Is it safe to try this plan if the candy won't work?

3. Ought I to cover the frames with a chaff cushion?

4. Will it be better to put them out early in the spring to feed them, or wait until the maple blooms appear?

5. There is a continual hum in the hives, sometimes sufficient to be heard across the cellar. Is this too much noise to call it good behavior, and, if so, what is the cause and remedy?

6. Have the Punic bees proved a success in this country, or are they still an experiment?

NEW HAMPSHIRE.

ANSWERS.—1. Probably. Perhaps not as thoroughly kneaded as it should have been, and perhaps *too fresh*. You will generally find directions to let it stand some time after being made. That gives time for the sugar to be dissolved by the honey, and if that time is not allowed it may be sugary. There is, however, little loss in the case, for you can collect the dry sugar that the bees have thrown down and use it over again, either now or in the form of syrup in the spring. Possibly you might succeed better to make common boiled candy, merely boiling sugar in a little water till it will be hard when dropped in cold water.

2. Yes, if the candy won't work, but it will work. I commend to your reading the article on page 86, by that very practical and common-sense bee-keeper, C. P. Dadant.

3. It will be better. Or, it may be more convenient to use pieces of old quilts, carpets, or something of the kind.

4. Somewhere from the middle of February till the middle of March it may do to take them out for a flight on a warm day, and then take them back in the cellar till after maple-bloom. Sometimes maples get in too much of a hurry, and it's better for the bees to stay where it's warmer, even if the maples are fools enough to start blooming only to be frozen up again.

5. Less noise would probably be better; but as cold as 35 degrees they will make a good deal of noise to keep themselves warm. Can't you warm up the cellar in some way? Even if only occasionally to 45° or more, it would help. Hot stones or jugs of hot water *tightly corked* might do it.

6. In the experimental stage; reports varying from favorable to extremely unfavorable.

Colony with an Imported Queen.

Last May (1904) I received by express a 3-frame nucleus containing the highest grade (according to price) imported Italian queen. The nucleus was given a 10-frame Danzenbaker hive, 7 frames containing foundation in full sheets. The nucleus did not build up quite as rapidly as I had hoped, but by the end of October, by dint of spreading brood and feeding sugar-water, it had grown to a fair-sized colony having 20 frames (double brood-chamber) of honey and brood. I turned a Danzenbaker cover over the hive, simply a thin ⅜-inch box, reaching a couple of inches below the top brood-chamber. I left the entrance 1x14 inches open, except for wire screen to keep out mice and robbers. The colony seemed to be wintering well, very well indeed. On occasional flight-days they came out actively, and there were never but a few dead bees on the bottom-board or in front of the hive. Dec. 8 and 31 bees were out in good force for play-spells, and Dec. 21 a few were out. Jan. 1, 1905, the temperature was 54 degrees in the shade, all the bees were out, and robbing began. (I have 7 colonies, one a weak one which I had carelessly left with the wire guard off.) Jan. 2 there was a snowstorm. Jan. 19 the temperature was only 38 degrees in the shade, but the sun was very much warmer for a short while, and the bees from the 3 south colonies (they are in pairs) came out in surprising force, also some bees from the hive containing the queen mentioned. At no time this winter has the temperature here in the daytime been to zero. But a few nights before the last-mentioned play-spell the temperature for a brief period was 6 degrees below zero.

On the morning of their last play-spell, previous to their coming out, I gently pulled out with a small stick, the dead bees that were on the bottom-boards of the 4 Danzenbaker hives. The 3 other hives are old-style with very small entrances. In the hive containing the queen mentioned only a few bees were on the bottom-board, a dozen or two at most. But all alone about the middle lay the queen herself. She was easy to identify as the same queen, because of her wing which I clipped last May. As she was not dried up, her death must have been quite recent. On the hive next to this one I had used a small entrance for protection. I pulled a load of dead bees out of it, and left a large entrance, as the other 2 Danzenbaker hives with wide-open entrances showed as few dead bees on the bottom-boards as the one with the queen did.

1. Since the other 2 wide-open entrance hives (which also faced the west wind) and the queen's hive (which faced east and has a building at its back) seemed to have a few dead bees, while the one Danzenbaker hive with the small entrance, about ⅜ x 8, was loaded with dead bees, is it likely that the imported queen perished from that cold-spell mentioned?

2. In a cold-spell wouldn't any queen be near the center of the cluster, and be among the first to die?

3. In case of starvation isn't the queen one of the last to die?

4. Is it possible that the mild winter has led to unseasonable brood-rearing and egg-laying, and undue tax on the queen?

5. In that case would the fact of considerable part of the stores being non-nitrogenous sugar-water work destruction to the queen or not?

6. Do bees ever supersede a queen in winter? If so, how could they rear a new queen without her being an unfertilized drone-layer?

7. Would you think it at all likely that they superseded last September, but left the original queen on the combs, as sometimes happens (so I have read) till she died naturally?

8. Would you be inclined to think that that hive has no queen?

9. Assuming it is not destroyed by robbing, how early next spring, if winter continues mild, will that colony cease to exist, or at least fall below the point of easy building up?

10. Is it possible to introduce a queen in winter in an outdoor hive? If so, how?

11. I notice in bee-papers one Southern queen-breeder advertises, "I can send you a queen any month in the year and guarantee safe arrival." And another, "Queens from now until Feb. 1, $— each." Would it be advisable to attempt to secure a new queen now, or do these advertisers mean these offers only for their Southern customers?

12. If you had this colony what line of action would you pursue to make the best of the matter for the coming season? INDIANA.

ANSWERS.—1. No. 2. Yes. 3. Yes.

4. Even if the queen should lay several times as much as usual in winter, it would still be a small amount compared with her full capacity, and would not be likely to have any appreciable effect on her health and strength.

5. The lack of nitrogenous food would have for one effect to save the queen from laying, and it couldn't kill the queen without killing the other bees.

6. Probably not. I don't know for certain just what would be the result in all cases if a queen were killed in winter. If at a time when brood was present they might rear a queen, and it is among the possibilities that she might be fertilized as soon as drones were flying; but it is not likely that such a queen would be valuable.

7. It is entirely possible. It is also possible that she was killed on the occasion of the robbing mentioned.

8. The probabilities are in that direction, but you can't be sure until you find no brood in spring when all other colonies have brood well under way.

9. Not till in honey harvest if laying was kept up well in the fall.

10 and 11. Yes, you can introduce in winter the same way as in summer, but it is hardly advisable. It would disturb the colony unnecessarily, and there would be no particular gain. Even with guaranteed arrival, she might not arrive in as good condition as later.

12. I'm not sure whether it's worth while to tell you what *I* would do, for bee-keepers who have been no longer in the business than you have are almost certain to think it of more importance to have a large number of hives with bees in than to have a large number of bees in each hive. The chances are 99 in 100 that I would break up the colony when spring opened—of course on the supposition that it is queenless or has a worthless queen—distributing combs and bees to colonies that would be the better for strengthening. That would leave all in shape so that by fall I'd have more good colonies than if I had coaxed along the queenless one. But you'll hardly be willing to break up that colony, and you can keep gradually adding brood from other colonies and buy a queen to introduce near the opening of the honey harvest. But if you can steel yourself to be so hard-hearted, you'd better break up a colony that is queenless in the spring.

A Queen-Bee Free as a Premium.—We are now booking orders for untested Italian queens to be delivered in May or June. This is the premium offer: To a subscriber whose own subscription to the American Bee Journal is paid at least to the end of 1905, we will give an untested Italian queen for sending us one new subscription with $1.00 for the Bee Journal a year. Now is a good time to get new subscribers. If you wish extra copies of the Bee Journal for use as samples, let us know how many you want and we will mail them to you. Address all orders to the office of the American Bee Journal.

Convention Proceedings

ONTARIO BEE-KEEPERS' CONVENTION.

REPORTED BY MORLEY PETTIT.

(Continued from page 119.)

The Question Drawer was reversed from the usual order. The president chose a subject, subdivided it, and asked the members leading questions.

PRODUCING COMB HONEY.

1. What race of bees would you choose for producing comb honey?

R. F. Holtermann would choose Carniolans, if it were not for their tendency to swarm. They are hardy, build up well in spring, cap white, use little propolis; in fact, seem to have only one fault; but on that account, in a locality where the flow is continuous, and inducement to swarm great, they must be strongly mixed with Italian blood.

Jacob Alpaugh—A cross between Italians and blacks produces good comb honey. Blacks cap whiter but do not store so well. There is a great difference in Italian bees.

WHAT SIZED HIVE WOULD YOU USE?

Morley Pettit prefers the 10-frame Langstroth.

F. J. Miller considers the Heddon hive excellent for either comb or extracted honey.

Jno. Fixter for five years got more honey from a 10-frame than from either the 8-frame or 12-frame hive.

Mr. Sibbald said last year if the hive is too large put in a division-board and run the hive at the capacity it has at the beginning of the flow.

R. H. Smith—How about uniting at the beginning of the honey-flow?

Mr. Holtermann—I do not care for uniting at any time.

Morley Pettit—The main thing is to equalize brood. This can be done by taking from the strong and giving to the weak. It should be capped brood, and not more than one or two combs at a time from any hive.

TIME OF PUTTING ON SUPERS.

Mr. Alpaugh—I would make sure to have supers on in plenty of time. I do not find the bees do the foundation any harm before the season. It is after the honey-flow is over that they gnaw and wax it.

R. H. Smith—I would not put on supers until the bees are ready to work in them. If you have a super drawn out from last year, put that on first; but be sure last year's honey is extracted out of it. A good way to get well-filled sections is to put on extracting supers until the bees swarm, then put sections on the swarm. But sometimes the season is half over and not nearly so much comb is obtained.

Mr. Holtermann—We must consider the most paying system. To wait until the bees swarm may give the best quality, but the quantity is so much less that the money returns are entailed. In any case, sections must not be put on until the end of the dark honey flow. Where a raspberry honey counts, the honey from it often runs on into the white clover season and injures quality considerably.

SECTION FOUNDATION, AND HOW PUT IN?

How much foundation would you use in a section? And how would you put it in?

The consensus of opinion was that the section should be *filled* with foundation.

R. H. Smith said it should fit the sides and bottom to 1-16 inch.

F. J. Miller fastens foundation with a hot-plate machine, and uses a bottom-starter.

H. G. Sibbald, whose comb honey took first prize at the Honey Show, uses what he calls an old-fashioned method. He puts the section together, puts the foundation in, and runs melted wax around, fastening it on all four sides.

Mr. Holtermann—You cannot get good sections without full-fitting foundation. Too many supply dealers turn out

narrow foundation which does not fit the sections. That made by the Weed process does not sag and can be put in to fit.

Morley Pettit—If foundation is *hung the strong way* in the sections it will not sag. By the "strong way" I mean with ridges running up and down instead of horizontally. With strong foundation put in this way there is no occasion for using bottom-starters.

WHAT STYLE OF SEPARATOR.

Morley Pettit—The best separator I have used is rather expensive. It is bored full of ¼-inch holes, so the bees pass freely through it. It is important to allow the bees to go through the separators, but slatted separators give a wash-board appearance to the comb.

Mr. Alpaugh—I do not see the need of separators.

Mr. Holtermann—The best separtor known was invented by Mr. Bettsinger, of New York State. It is made of wire cloth with a quarter-inch mesh.

HIVING SWARMS.

Do you hive swarms on starters, full foundation or combs?

Use a contracted brood-nest with starters and one comb. Mr. Hall said this comb should contain young brood to make the hive more home-like.

R. H. Smith—Use 2-inch starters. They give less pollen in the sections than narrow starters.

PUTTING SECTIONS ON SWARMS.

Do you put sections on the swarms as soon as they are hived?

Mr. Hall—Put them on at once.

Morley Pettit—If the swarm is inclined to be restless at first, do not put the dummies in the brood-chamber for a few days.

REMOVING SECTION-SUPERS FROM HIVES.

In taking off sections do you use a bee-escape, or how?

Mr. Hall—During the honey-flow, when no robbers are about, set the supers on the ground and the bees fly home. After the honey-flow use escapes.

Mr. Holtermann recommended a cloth soaked in carbolic acid solution. Insects abhor this acid and the smell from the cloth spread over the super will drive them down and out.

The evening of Nov. 15, the Fruit-Growers, the Bee-Keepers, and the Horticultural Associations held a mass meeting in Association Hall, at which Mayor Urquart, of Toronto, officially welcomed the numerous delegates to the city. Honorable Jno. Dryden, the Ontario Minister of Agriculture, was chairman of the meeting. Dr. Jas. Fletcher, of the Central Experimental Farm, Ottawa, addressed the meeting on

"WHAT THE LITTLE BEE IS DOING."

In his remarks the Doctor called attention to the interdependence of all things in nature, as illustrated by the community of interest between the fruit-men and the bee-keepers. The little bee is doing much more than it is given credit for, and not some things that it is supposed to be doing. There is much to be learned from the life of the bee. The fact that bees are so common is assurance that more should be known about them. Things common to us should be best known. The scheme of Nature is to make things perfect. One of her plans is to fertilize flowers, and to do this two sets of organs are developed, one for the production of fruit or seed, and another for protection and fertilization. And because Nature abhors self-fertilization she provides means by which her scheme may be carried out. This plan insures uniformity of type in all the productions of Nature. One of the most active agents in the carrying out of this scheme of Nature is the bee. In return for this service the flowers of Canada provide the best nectar and honey that can be obtained in any part of the world, at the time when they require the service of bees.

One of the best things for the bee-keepers is the assertion made a few years ago by fruit-men, that bees punctured fruit. This sensational libel upon the bee set people to studying more closely than before, with the result that bees are better known. People are now better aware that the bee and the wasp are not close relatives. Bees have a business-like way of going from flower to flower of the same kind, not from one variety of flower to another. This insures a uniform quality of honey and an economical distribution of pollen.

Peculiar as it may seem, bees gather honey from flowers most extensively just at the time when flowers are most in need of having pollen distributed. The flowers in their turn change their color after fertilization, so that the bee knows it is no longer in need of visitation.

In some parts fruit-growers are finding it to their advantage to keep bees in their orchards, simply for the assistance the bees give in the perfecting of fruit.

SECOND DAY—WEDNESDAY MORNING SESSION.

Prof. F. C. Harrison, of the Ontario Agricultural College at Guelph, addressed the convention. He congratulated the Association on having in a way amalgamated with the fruit-growers and horticulturists. He said we should follow the example of these associations, which, not content with holding annual meetings, are going out during the year to hold orchard and garden meetings. We are in an era of greater prosperity and should help those who are starting in the business. We should have apiary meetings to give instructions in the best handling of bees. We should also recognize the fact that apiculture is taught only at the Agricultural College by offering an annual prize to be competed for by students at the college. The Professor then took up his subject:

DISEASES OF BEE-LARVÆ.

The diseases of the larvæ of bees may be roughly divided into two groups: one, in which the disease is contagious, and the other in which the disease is not due to a special virus but to some physiological or physical cause. The contagious diseases are the most harmful, as they spread from hive to hive and from one apiary to another, often producing a severe epidemic.

In all cases of infectious diseases there must be present a virus or a living organism which may be a fungus or a mould-like growth, or due to minute organisms, which are popularly called bacteria. These micro-organisms may be carried from one hive to another in many different ways, and the following are the principal means by which contagion is spread, and infection caused:

1. Bees entering wrong hives.
2. Bees robbing a diseased colony.
3. Feeding bees with honey from an infected hive.
4. Inserting diseased combs into healthy hives.
5. Using as a foundation, wax from a diseased colony which has been improperly boiled.
6. Transferring bees into hives that have been inhabited by a diseased colony without first thoroughly disinfecting it.
7. Placing a hive upon a stand previously occupied by a diseased colony.
8. The handling of healthy colonies by the bee-keeper after manipulating diseased hives.
9. The introduction of a diseased queen.
10. Healthy bees visiting flowers which may have been infected by diseased bees.

All these are means by which infection can be carried or transferred from one place to another, and evidence can be brought forward to show that disease has been produced by each of the different means above mentioned. "Foul brood" being the infectious disease which is best known naturally affords more examples of these methods of transmission than any one of the other contagious bee diseases.

It is important that all bee-keepers should clearly understand these means by which infection is carried; also they should have a knowledge of the appearance of the various diseases of bees so that they can diagnose or tell the kind and character of the disease in order to apply intelligently methods of prevention or cure.

I shall endeavor to give you a brief account of the general appearances of several of the best known diseases, taking them in order of their importance.

FOUL BROOD.

The larvæ attacked by *B. alvei*—the cause of foul brood—may die during all stages of their development. In every instance the larvæ lose their white and glossy appearance, when suffering from the disease, and turn to a dull yellowish, and later to a brownish, color. In the further progress of the disease, they die and collapse into a darkish brown, coffee-colored, more or less tenacious, shapeless mass. This mass is characterized by its viscid character and before it dries up can be drawn out in threads when lifted with a match or a pointed instrument. It has an offensive odor, which is said to resemble that of glue, and when much disease is present, there is an ammonia-like smell. The cap

of the larvæ sinks and appears concave instead of being converse or flat, and it is often perforated with a small hole near the center. Often the appearance of this sunken cell is the first indication of disease noticed by the bee-keeper. The decomposed larvæ gradually dry up and ultimately form a dry black or deep brown crust at the bottom of the cell.

The sunken and perforated cappings, the reduction of the larvæ to a tenacious brown mass, the characteristic odor and stringy nature of the mass, and the dwindling of the colony, are the most noticeable indications and results of the disease.

As the disease advances, the offensive odor pervades the hive, and when infection is spread over a great number of brood-combs the smell may be noticed some distance away. The bees become more and more despondent over their helpless condition and ultimately succumb or in some cases desert their hive.

THE NEW YORK BEE DISEASE, OR BLACK BROOD.

For a number of years past there has existed in the State of New York a disease known to the bee-keepers there as "Black Brood." It has also been called "New York Bee Disease," from the fact that it was first noticed in that State. So far as is known it was reported first from Sloanville, N. Y. The description given by the New York Bee-Inspector is as follows:

"The young larvæ have a yellowish speck upon the body, about the size of a pinhead, while the older brood stand out lengthwise in the cell, sharp at the ends, white, but not capped over. This brood dies, and is either removed by the bees or later flattens down in the cell and becomes a cream-colored, and in a later stage, a coffee-colored, mass. Later in the season some brood that died in the cells which had been capped over, becomes a rotten mass, a coffee-colored matter about the consistency of heavy honey. A toothpick dipped into this and drawn out causes this matter to stretch from half an inch to an inch, but does not break and fly back as quickly as in 'Foul Brood.' The smell is not very bad, but in some cases it has a sour smell; while in some of the sealed, rotten, coffee-colored brood, there is a kind of rotten smell, but not like that of the old-time 'Foul Brood.' Howard states with regard to this disease, that the brood is usually attacked late in the larval life, and dies during pupation, or later when nearly mature and ready to come forth through the chrysalis capping. Even after leaving the cell the bees are so feeble that they fall from the combs helpless. Most of the brood die after sealing. When the larvæ show the first signs of this disease there appears a brownish spot upon the body about the size of a pinhead. The larvæ may yet receive nourishment for a day or two, but as the fermentation increases the brownish spot enlarges. The larvæ dies, and stands out swollen and sharp at the ends. In time the brood becomes dark and rotten, and these rotten masses, in time, break down and settle to the lower side of the cells as a watery, syrupy, granular liquid not like the sticky-ropy, or glue-like semi-fluid substance of 'Foul Brood.' It does not adhere to the cell-walls like that of 'Foul Brood,' and has not the characteristic foul odor which attracts carrion flies, but a sour, rotten-apple smell. The cap is disturbed from without, sometimes uncapped and the cell-contents removed by the bees."

It will be seen from these accounts that whilst agreeing in some particulars there are points of difference between the two descriptions given of this disease, and probably if a bacteriological examination of the diseased larvæ had been made by Mr. N. D. West, the New York State bee-inspector, the organism which produces "Foul Brood" might have been found.

Howard, in connection with this disease, described an organism which he considered to be the causal agent of "Black Brood." He gave the name of *Bacillus millii* to it, from its resemblance to millet-seed. The *B. millii* is a spindle-shaped organism which forms spores, and, according to Howard's drawings, forms two spores in each cell, a rather remarkable occurrence, for in most bacteria, as a rule, only one spore is found in a single cell. No description is given of the germination of these spores, nor the cultural features of this organism, so that except from its peculiar shape and its ability to form two spores it would be a rather difficult matter to identify this organism.

Howard claims to have produced the disease by feeding bees with syrups containing *B. millii.*

This disease has also been the subject of an investigation by Moore and White, of the New York Veterinary College, Cornell University. These investigators have examined a number of specimens sent to them during the season, and which were labelled as "Black Brood." The ten specimens of black brood contained a bacillus which suggested by its constant presence that possibly it was the cause of the trouble. It was thought first that the bacillus so constantly associated with the black brood was the bacillus described by Howard as *B. millii;* but a more extended study of this organism showed that it resembled *B. alvei,* the cause of foul brood. A very careful investigation of this organism from the specimens of black brood confirmed the identity of the species from the different sources, and the only conclusion they came to was that the prevailing bee-disease in the State of New York was similar to, if not identical with, the foul brood of other States, Canada and Europe.

From this evidence there seems to be some doubt as to whether black brood is a new disease, caused by a new or partly-described organism, or whether it is merely a disease closely allied, if not identical, with foul brood, but occasionall y showing appearances which are different from the typical appearance of foul brood. Further investigation will be needed before this question can be properly settled.

PICKLED BROOD.

Pickled Brood is said to attack the larvæ about the time of pupation, and the appearance of the larvæ is similar to those that are infected with black brood, except that the brown spot is not present and no decomposition from putrefactive germs takes place in pickled brood. The cappings are usually undisturbed and the decayed brown masses do not adhere to the cell-walls. According to Howard, the infection in pickled brood is in bad pollen, and new pollen always causes it to disappear.

The cause of this disease is said to be a fungus (*Aspergillus Pollinis*). Moore and White, who examined five specimens of pickled brood, report no fungi present, but various micro-organisms were found, none of which, however, were specific.

CHILLED BROOD.

The cause of the death of the larvæ from this calamity is cold, as the name correctly indicates. It generally occurs when, after warm weather, which has induced the bees to deposit brood freely, a sudden change takes place, or very cold nights set in again. The brood in the center combs and where the bees cannot cover them sufficiently generally suffer most. The larvæ may be killed during all stages of their development, but the capped brood rarely suffers to any extent unless the change of temperature is much prolonged. In cases of chilled brood the larvæ turn gray, afterwards the color darkens and in the final stages of decomposition it becomes black. No ropiness develops and the putrid mass is more or less watery, and its smell is said to resemble stagnant water. No relation exists between chilled and foul brood although many writers have mistaken the one for the other or have stated that chilled brood turns to foul brood. Schirach, as long ago as 1769, clearly distinguished between the two. In fact, he said that chilled brood is no disease at all.

"Chilled brood" is caused by putrefactive bacteria which attack the larvæ *after* death. In foul brood and other infectious diseases, the micro-organisms attack the living brood and *cause* their death.

STARVED BROOD.

Occasionally instances of the starving of brood have been noticed. This occurrence probably can be explained by an abundant honey-flow, having induced the bees to encourage a large brood deposit, when after a severe extracting of honey, the bees were suddenly checked in the gathering of food for some time through bad weather. The brood do not die suddenly but become emaciated and dry up, rather than putrefy. This affection is of rare occurrence, but it is curious and interesting to note that Virgil in his Georgic on the husbandry of bees mentions starvation and the cure for it. The lines are as follows:

When sickness reigns, (for they as well as we
Feel all the effects of frail mortality),

By certain marks the new disease is seen,
Their color changes and their looks are thin;
Their funeral rites are formed and every bee
With grief attends the sad solemnity;
The few diseased survivors hang before
Their sickly cells and droop about the door,
Or slowly in their hives their limbs unfold,
Shrunk up with hunger and benumbed with cold.

* * * * * * * *

Now lay fresh honey near their empty rooms,
In troughs of hollow reeds whilst frying gums

Cast 'round a mist of spicy fumes.
Thus kindly tempt the famished swarm to eat
And gently reconcile them to their meat.

TREATMENT AND REMEDIES.

"Remove the cause, and the effect ceases." Practically all the various methods of cure of the infectious diseases of bees adopt this maxim more or less thoroughly. The various starvation methods aim at getting rid of the infected honey and the infected combs. The method of conquering the disease by feeding medicated syrups aims at the destruction of the vegetating bacteria, or preventing them from growing and the spores from developing. At the same time the action of the medicine may in some way exercise a tonic effect upon the bees. Treatment by means of disinfection by formalin or other vapor destroys the greater amount of infecting material which is present in the hives and in the comb, relying upon the natural resistance of the bees to get rid of any microorganisms that may be present in or upon them. The beneficial results obtained from any of these methods depend upon the thoroughness with which they are carried out.

Thus we have numerous instances of the starvation method failing, because of failure to disinfect the hive. Medicated syrups often fail because of methods of application; the use of weak or feeble drugs, and not using the medicine for a sufficiently long period at a time.

We have also occasional instances of the failure of the formalin treatment, perhaps due to improper methods of application, not using strong enough formalin, or not disinfecting the combs and hives in an air-tight box. These failures should not be counted against the method of treatment, for I am convinced that anyone of these methods, if properly and conscientiously carried out, will cure even the worst case of foul brood, which of all the infectious bee diseases is the most difficult disease to deal with.

It remains for each bee-keeper to decide for himself as to the method of treatment he intends to follow, and having made up his mind, he should carry out that treatment intelligently and thoroughly. F. C. HARRISON.

HOW TO MANAGE THE BEES.

"A Season with the Bees and How to Manage Them," by A. E. Hoshal, was next on the program. This was an illustrated talk in which the speaker had the hive and implements with which to show just how he did the various things described. He spoke to beginners rather than to old heads. There had been three main systems of bee-keeping—the box-hive system, the movable-frame system, and the case system. The old-fashioned way required no description. The second had for its root-principle the manipulation of individual combs. The third was a system of manipulating cases instead of combs. Mr. Hoshal believes the case system to be the best. The first week in June go out to the yard with smoker and veil. Get a good smoker; an experienced man can do with a poor smoker better than a beginner. You will soon discard the veil. Unpack the bees from their winter boxes. Some will have double-case brood-chambers, some single. When the honey starts, put on a slatted honey-board and another case. A single brood-chamber colony will give as much honey as a double brood-chamber colony in a short season.

A deep-frame hive gives the top third of comb filled with honey. The honey will be crowded downward as the season advances. The shallower the frame the less honey is stored in its upper part. With the Heddon cases the honey can be raised and empty combs put right over the brood. These shallow cases with narrow top and bottom bars to frames are accepted more readily than deeper ones. Then the narrow top and bottom bars admit of seeing right through between the combs to see the exact condition of things without handling the individual combs.

For clipping queens, about the 8th or 10th of June drive the bees up out of the lower case and through the excluder. The queen will be found on the top bars or on the under side of the excluder. It is an advantage to clip when the flow is on, as a smaller percentage of queens is lost. Then the queen is returned to the empty lower case where there are no bees to ball her.

When swarming-time comes, have hive ready with two cases, one empty and the other filled with combs. Catch the queen in a cage when she comes out. Lift off the supers. Set the hive off the stand and the new one in its place. Put the supers on the swarm. Close the entrance of the parent hive with grass. In a few days take out the empty case from underneath and give plenty of super-room. In the parent-hive are queen-cells and danger of after-swarms. In 8 or 10 days shift the parent hive so as to throw the flying workers into the swarm.

Spring management consists in having good queens, plenty of stores, warmth, and *let alone*.

Towards the end of the season remove the honey with escapes. Be careful not to take all the honey. Leave the lower surplus case. For winter, unite weak colonies in July as soon as the flow is over. Set one on the other; don't care if old bees are killed. The brood is what counts. Each hive must weigh 50 pounds if double; if a single case, 40 pounds. Make up shortage by feeding in the fall. In spring *let severely alone*. Much handling in spring causes loss of queens. Note the importance of having the brood-chamber shallow and filled with brood.

Mr. W. J. Craig then read a paper on

THE INFLUENCE OF BEE JOURNALS.

Considering the subject of the influence of bee-journals broadly, we may rightly apply much of what has been said, and can be said, of the influence of current literature generally. We live in an age of literature, an age when people read a great deal and think a great deal, and whether in the form of newspaper, magazine, book or pamphlet, such reading must necessarily wield a large influence over the individual and community, in the formation of opinion, the moulding of character, and the regulation of action.

Bee books and journals have taken their distinctive place among the literature of the world. From recent statistics we find that there are over eighty magazines devoted exclusively to bee-keeping. France leads the way with 19, Germany 11, Russia 9, Belgium 9, United States 7, Austria 6, Italy 3; England, Spain, Algiers and Australia 2 each; Denmark, Switzerland, Sweden, Norway, Holland, Romania, Nederland, Ireland and Canada, one each.

These magazines must, as a matter of course, have an effect upon the bee-keeping of the many thousands of readers they represent; all of them advocating better bee-keeping, better systems of management, better marketing, presenting new theories, reporting new discoveries and inventions, vieing with each other in original matter from the best authorities, and in carefully-selected matter from the most reliable sources, standing up for the right and exposing and denouncing the fraudulent and the wrong.

All this can be truly said of present-day bee-journals; they are, in brief, doing all that they possibly can do for the furtherance and development of the bee-keeping industry. This statement may no doubt be questioned by those who consider the motive of the bee-journal always a selfish one, and that it exists merely for the sake of direct gain to the publisher, or a desirable adjunct to his business. Such view is narrow, and mean, and selfish in itself. None of the journals that we know of are making a fortune; in fact, some of them would have gone out of existence long ago had it not been for the substantial financial support of their publishers.

Guide-books and hand-books on general management are good and useful as references, or for the beginner in laying a foundation of sound apicultural knowledge, but if the novice is to advance, with advancing thought and advancing methods, he must have access to current bee-literature. The bee-keeper's column of the newspaper or agricultural magazine, no matter how well conducted, cannot be satisfactory to the bee-keeper who would make a success of his bee-keeping, and can never take the place of the journal devoted exclusively to apiculture; in fact, the most dangerous and obstinate heresies that bee-keepers have had to contend with have issued from these sources.

Local conditions and requirements, apart from loyalty to State or Country, make the support of the local representative magazine of first importance; then as many others as the bee-keeper feels he can afford. Unfortunately the great mass of small bee-keepers do not seem to have a proper estimate of the value of apicultural information; they are interested to a very small extent—"only a few hives for their own use," they tell us; but somehow more or less of their ill-favored product finds it way on the market, to the detriment of the excellent article placed there by the intelligent producer. There are probably upwards of 8,000 such bee-keepers in our own Dominion, whose bee-keeping is of the crudest character.

Our Canadian publication needs the coöperation of this Association much more than it has been favored with. There

is no lack of ability on your part to make the Canadian Bee Journal more distinctly Canadian, and to rank like Canadian honey—the "first of its kind." W. J. CRAIG.

Messrs. Deadman, Holtermann, E. Grainger, R. H. Smith, Chadwick, Sparling, Dickenson, Darling and others spoke of the importance of bee-journals in general, and of our national bee-journal in particular. Bee-keepers should not only subscribe, but should contribute of their best thought to the Canadian Bee Journal.

Mr. W. Z. Hutchinson sent a paper on

QUEENS AND THEIR INFLUENCE UPON SUCCESS IN BEE-CULTURE.

I expect it will be called heresy, but, many times, when reading extravagant expressions about "the whole of bee-keeping centering upon the queen," I have felt like exclaiming: "Other things being equal, one queen is as good as another." This may be putting it stronger than it will bear; besides, it does not *exactly* express my meaning. Perhaps I can not make myself exactly understood, but I will try.

It is not so much what a queen is *herself*, as what her ancestors were; or, rather, what her *bees* are. That is, she may be an insignificant-looking specimen, may have been reared in a manner wholly at variance with the established principles of queen-rearing; may be one of those short-lived affairs whose days are soon numbered, yet, if she comes from the *right stock*, her bees, whatever may be the number of which she becomes the mother, are *just as good bees as can be produced*. In other words, there is no system of queen-rearing that will improve a strain of bees.

Try and not misunderstand me. To be sure, we must have queens that are sufficiently prolific to keep the brood-nests full of brood at a time of the year when this is desirable; and possessed of a longevity that will enable them to perform this feat two or more seasons; having this, what more is needed? As a rule, the honey-producer need trouble his head very little about the rearing of queens. The bees will attend to that, and rear just as good queens as are needed. If his queen don't fill the brood-nests in the required season, how much more practical simply to reduce the size of his brood-nests until the queens *do* fill them, instead of ransacking the earth for more prolific queens, or else by twisting, turning, and shifting about of combs, endeavor to make one queen lay an increased number of eggs.

As I look at the matter, in the light in which I am discussing it, the queen is simply the vehicle of transmission from one generation to another. It is the *qualities* to be transmitted, rather than the *vehicle* of transmission, that should receive our attention. To illustrate: A man has a strain of bees that are of little value as honey-gatherers. Can he, by any sort of "jugglery" at queen-rearing, transform them into energetic workers? Something might be done in the way of selection, but not by methods of queen-rearing.

Bee-keepers often tell how much better are the bees from the queen secured from this breeder than from the queen bought of some other breeder, or that the bees from the daughter of a queen from a certain breeder are superior to bees from the daughters of some other queen, and have argued from this that the queens, and the manner in which they were reared, caused the difference in results. I say *no*. The difference is in the *strain of bees*, and not in the manner in which the queens were reared.

That there *are* circumstances in which much depends upon the queen it is idle to dispute. Some of our best bee-keepers have argued against extra-prolificness in queens, some of them even going so far as to assert that prolificness in the queen is at the expense of quality in the bees; but that prolificness is all-important to the user of large brood-nests can not be dodged. *He* must have prolific queens, else one-half of his brood-chamber is transformed into a store-room. But this extra prolificness is not secured by some pecular method of queen-rearing, but by *selection*—by rearing queens from the colonies having the most prolific queens. Here, again, the queen is simply the vehicle for transmitting the quality of prolificness from one generation to the other.

The *age* of queens may also have some bearing upon success. Where the harvest ends with white clover, more surplus will be secured if the bees do not swarm; and colonies with young queens are far less likely to swarm. Then, again, young queens lay much later in the fall, and this has a bearing upon the subject of wintering, as also does the time when they begin laying in the spring.

As I have already said, we need queens sufficiently prolific to fill the brood-nests with eggs at the season of the year when this is desirable, and possessed of a reasonable amount of longevity. This secured, nothing more needs consideration except the *stock* from which they come. Naturally, when a man buys a queen, he expects to get the worth of his money. If he buys her to rear queens from, he expects her to be able to endow her royal offspring with the qualities and characteristics of her ancestors; and, if she does this, he need not mourn if she lives only long enough to allow him to secure a goodly number of her daughters. If he buys queens in large quantities to re-queen an apiary, he has a right to feel that he has been cheated if the queens live only a few short months. The practical honey-producer has not this problem to solve. Simply let the bees rear their own queens, and they will be as good as any. That queens can be reared artificially, the equal of any, there is no doubt. Most *certainly* they can. How it can be done has been repeatedly published.

As I said at the beginning, we have a lot of sayings something like the following: "Good queens are at the foundation of bee-keeping." "Bee-keeping all centers about the queen." "As the queen lays all of the eggs, of course, success depends upon her." It is to combat such ideas as these that I have written. The queen is of no more importance than the hive, the combs, or the location. By importance I mean, in this case, that which can by some decision, or management of the bee-keeper, be made to contribute to his success. W. Z. HUTCHINSON.

Mr. H. G. Sibbald read a paper on

FOUL BROOD.

A disease that attacks the larvæ or brood of bees, the most dangerous and destructive of any of the diseases that bees are subject to, and had made such headway that the Ontario government a number of years ago passed a law and appointed an inspector for its suppression. Credit for obtaining this excellent law is due, I believe, to our Ontario Bee-Keepers' Association.

Since the inception of the law and inspection, the disease has been checked and is better understood by the mass of expert bee-keepers. Still, on account of the contagious nature of the disease, and the ignorance of a few, the expert is constantly in danger as long as it exists and bees are in the hands of these few.

It is therefore a subject worthy of a place in our program, and of a full discussion by those who, like myself, have had to their sorrow more experience than is desirable or profitable.

The larvæ or brood in its early stages is attacked by the foul brood germs, decomposes, decays, and settles in a shapeless mass to the bottom and lower side of the cell; becomes yellowish-brown in color at first, later brown or coffee-color; gives off a very offensive odor, and if pricked by a pin or toothpick, it will be found ropy, and will draw or string out a half inch or so. If the cell has been capped the capping recedes, and presents a sunken appearance. In time the matter dries down and is of such a sticky, gluey nature that it adheres strongly to the side and bottom of the cell. Thus leaving what we call the scale or stain-mark of foul brood.

Other forms of dead brood, such as chilled, stained, pickled and poisoned, are different and may be described as follows:

The larva dies, but holds its form better, that is, shrinks and dries from the outsides; gives off very little odor and less offensive; does not adhere so tightly to the cell side, and may be removed by a pin or toothpick, and when pricked by them will not string out but appears watery. They will be removed by the bees themselves.

Not so with foul brood, however, for, soon after the death of the larva, it becomes so foul that I verily believe not a bee can be found that will attempt to clean it out. The cell is apparently avoided until it becomes dried down and the odor has become less noticeable. The bees then accept it again, and after polishing it, fill it with nectar. The moisture thus applied softens the scale or stain-marks and releases the thousands of foul brood germs, which float in the honey or nectar, awaiting only until fed to larvæ, thus coming in contact with congenial matter, causing its death and their further development and multiplication. Thus it spreads more and more, cells become polluted, the colony dwindles and dies, leaving its honey a prey to robber-bees which unsuspectingly carry it to their homes and

thereby transmit the disease until an apiary will soon be destroyed and neighboring apiaries jeopardized.

Every person who keeps bees, whether they have many or few, should study and try to be able to detect the disease in its early stages, and know how it may be carried from one hive to another, which might be briefly summed up in a few words. In any way in which honey or the stain-marked cells can be changed from one hive to another. Watch the brood—take an interest in it; whenever you lift out a frame take a look at the brood. If it is all healthy, fat and white-looking, all is well. If not, apply the tests and find out what is the matter, and, if you find the real thing, close the hive and mark it and consider.

To cure it, we must get rid of the combs and honey, for therein is the disease and germs.

Go to the colony late in the evening when the bees will not fly or scatter to other hives. Shake the bees off into the hive and give a set of frames with foundation starters. We have thus gotten rid of the combs as far as the colony is concerned. Not so with the honey. As soon as we disturbed the colony the bees loaded themselves with honey, and we must still get rid of that. They also clean up any that shook out during the manipulation on the floor of the hive, and any that remains on burr-combs or was attached to the inside of the hives. This they would store if they had a particle of comb supplied ready. We have only given foundation starters, however, and they must work it out. Wax-secretion is necessary, and most of the honey is digested and used; but they soon have cells built and may store some of the diseased honey therein. To make a complete cure it is therefore necessary again to shake three days later, the same way as before, and supply full sheets.

Melt up or burn up the old combs and the first set of starters, and the cure is complete, if properly carried out.

This cure can only be applied in the early part of the season, and during a honey-flow. If no flow is on, the bees must be fed or they would swarm out, and perhaps scatter into one or more hives, and thus make matters worse. If the disease is discovered late in the season, and the colony still strong, leave it until November, take the combs away and supply honey from a clean colony, in full, sealed combs. The queen is not now laying, and any honey that they have picked up will be consumed first, and thus out of the way.

If a yard of bees or apiary is badly diseased, when discovered, send for the inspector or some one who has had experience, so that it is unnecessary for me to describe how to go about curing a badly-infected yard.

In looking for the disease, hold the frame or comb so the light may shine into it. The stain-marks may be seen by standing with your back to the sun, and holding so the light will shine on and into the lower side of the cell.

In dealing with foul brood, the first loss is the least, and while it is well to cure as economically as possible, if we have a large number of colonies, plenty to do, and the disease is not discovered until after the honey-flow, it would be better perhaps to destroy the combs and kill the bees. The top story or super-combs, if very clean and free from pollen, may be saved by having the diseased colony clean it out before curing. But in this case, again, perhaps the first loss will be the least and it might be better to melt the combs.

Never put a diseased colony into winter quarters.

Always clip the queen before shaking to cure.

H. G. SIBBALD.

Mr. Hoshal—When I treated my own yard, it had not fully developed. In the first stages if we change the queen we cure the disease.

Prof. Harrison—There are different degrees of virulence in foul brood as in typhoid or other human diseases. There is no specific method for curing foul brood. Mr. Sibbald has carried out the Formalin Method very well. It is considered an efficient disinfectant in the case of human diseases, and should be so for *Bacillus Alvei* if properly used. The gas generated is more potent if the temperature is low and there is lots of moisture. Either hang wet sheets or turn on steam to get moisture. Leave in a tight box for 18 to 24 hours. Bertrand recommends medicated syrups—formic acid. Through long exposure the bees of Europe have become partly immune to the disease. In a similar way the sheep of Algiers are partly immune to anthrax.

INSPECTOR OF APIARIES' REPORT.

During 1904 I visited bee-yards in the Counties of Norfolk, Brant, Simcoe, Victoria, Perth, Oxford, Wentworth, Lincoln, Peel, Grey, York and Ontario. I inspected 91 apiaries, and found foul brood in 32 of them, and dead brood of other kinds in many others.

The spring was one of the most unfavorable for bees that we have had in many years. At no time during the spring did bees bring in honey fast enough to keep pace with the amount of larvæ that required feeding, and the result was that more or less starved brood was to be found in every apiary. I received many samples by mail of starved brood, asking what it was, many dreading it to be foul brood because some of the capped cells of brood were punctured. I also received samples that contained both foul and starved brood in the same comb.

I set the bee-keepers to feeding in every apiary that I examined during April, May and the early part of June. I was much pleased with the way the bee-keepers took hold and cured their apiaries of foul brood.

It is one thing to know how to cure an apiary of foul brood in the shortest possible time and to do it with the least loss, but it is quite another thing to handle all classes of men, and particularly so when things get into hot dispute over the sales of diseased colonies, and notes for large amounts have been given. No man on earth can deal with cases of this kind so well as the inspector, and I always claimed the right to have such cases placed in my hands to deal out justice to both parties, and I am pleased to say that they were always left to me, and that I got things settled very nicely.

Death makes big changes, and where the widows had diseased apiaries and wanted to sell the bees, I managed the business for them, and had everything put to rights as nice as the flowers of May, and secured fair prices for them.

In every locality that I went into I picked out the best bee-keeper in it to go the rounds with me, so that he could (on the quiet) let me know from time to time how the people were getting on at the curing. By keeping in touch with the business this way, I was able to get everything put to rights with the help of the good men that "I picked out to pad the road with me."

With the help of those men and very many others, I have not only driven the disease out of the Province in the most wholesale way, but converted the foul-broody apiaries into the best paying ones in Ontario.

No Province or State in the world had as much foul brood in it as Ontario had when I first started out to cure the diseased apiaries of foul brood, and now no country has as many fine, clean ones for the number kept.

For the very courteous treatment that I received from every person while on my rounds, I return to them my most heartfelt thanks.

WM. MCEVOY.

Mr. F. J. Miller read a paper on

THE PREVENTION AND CONTROL OF SWARMING AS USED WITH THE HEDDON HIVE IN THE PRODUCTION OF EXTRACTED HONEY.

The subject assigned me is one leading up from early spring management, hence my article begins with the work as the hives leave the winter-cases. At this time supers are put on all colonies showing sufficient strength. Queen-clipping follows as rapidly as possible, great care being taken that no queen is allowed to pass unseen although last year's record may show her to have been clipped. Apple-bloom is now closing, and some queens may yet remain unclipped; this makes but little difference with the short-cut methods of handling the divisible brood-chamber hive, and the work is completed as I must *know* that every queen is clipped in order to carry out our future plans.

During this early management a watchful eye is kept that no colony becomes congested with honey in the brood-nest. If the queen is being crowded and not allowed all the room she can occupy, the divisible brood-chamber hive affords the quickest results possible with the least amount of labor. We simply divide the center of the brood-nest horizontally by exchanging the two sectional parts of the brood-chamber, i. e., by replacing the bottom-chamber with the top one, thus placing honey in the center of the brood-nest. This being averse to the instinct of the bees the honey is quickly removed. The brood now extending to the top-bars under the queen-excluder, the honey is carried above this line into the supers, leaving empty cells for the use of the queen in the center of the brood-nest as it now exists.

During the week of honey-dearth between fruit-bloom and white-clover, this interchanging of the brood-nest has the same stimulating effect as feeding, or the uncapping of honey. With the opening of white-clover supers are again added un-

derneath on the tiering-up plan, as soon as the last one contains from five to seven pounds of nectar.

About this time, or as soon as the indications of swarming are apparent, each yard is visited as nearly every four days as the weather will permit. During these visits each hive is examined for queen-cells by simply raising one end of the top section of the brood-chamber, and drawing slightly forward and raising it up about six inches, thus giving a view of the bottom-bars, which will expose a part of any queen-cells that may be present. If there are no cells in view the hive is closed, the work being completed; but if, on the contrary, queen-cells are started, or in any stage of completion, then a division is made as follows:

The top section of the brood-chamber with queen-excluder, and, in most cases with the queen, is removed and placed on top of a chamber of foundation or empty combs at the side of the colony; also placing a chamber of foundation or empty combs on the colony. Add a queen-excluder and return all supers to the colony. All danger of swarming is now over for the present. An abbreviated entry is now made, showing at a glance the date of this division.

On returning to the yard in four days the usual examination takes place: in five cases out of six the entrance of the division made four days ago will show dead drones, indicating the presence of the queen. A record now being made to this effect no further work is required on this division or parent-colony during this visit.

Four days later, or on the second visit after the division is made, the colony must have the queen-cells removed from the combs in the bottom section of the brood-chamber, and as they are likely to have larvæ yet held back, of which they will again start queen-cells, they require cutting again any time within the next two visits, and either give a virgin or laying queen, or return the division to the colony. Or the division may be left in the present condition beside the colony until the busy season is over, when according to the strength and amount of honey it contains, it is made use of either to be placed on a separate stand or to be united with another division.

The system I have here outlined is one I have used for several years, and have found it to work admirably. The loss from absconding swarms does not exceed an average of two, or possibly three, for each yard during the season. Being a system of short cuts it is capable of much improvement, according to the skill of the apiarist; and reduces the amount of skilled labor to a minimum, one man being able properly to attend to three or four yards of 90 or 100 colonies each, doing all of the yard work himself, only requiring the aid of one unskilled helper in the honey-house during extracting.

Having endeavored to give as concise an account of my work as possible, I may have left out details, but I trust it may bring out either discussion or thought that may be profitable to the members present. F. J. MILLER.

(Continued next week.)

Our Sister Bee-Keepers

Conducted by EMMA M. WILSON, Marengo, Ill.

Report for 1904—A Propolized Experience.

DEAR MISS WILSON:—I know I am very tardy with my report, but I was extremely busy at the time it should have been made. We have been building a new house, and moving therein—no doubt most of the sisters know that to move means work.

I had 13 colonies in the spring, 6 of which I bought in all kinds of boxes, and they had black queens. I now have 17 colonies of Italians (some few of the bees are possibly hybrids) in Danzenbaker hives.

I harvested 769 sections of honey, most of which was fall honey, the spring crop being almost a failure. The best colony stored 143 finished sections. Some colonies containing black queens stored—nothing. Some of the fall honey is beautifully white, much nicer than the spring honey. (It is from wild aster.)

My bees are experts on propolis, this locality being adapted to any amount of practice, and for the benefit of any other propolized sufferers I will tell how I changed my Danzenbaker hives. Of course if I hadn't been ignorant I never would have put all of my bees on closed-end frames, and frames that rest on cleats way down in the middle of the hive, at that. (No doubt the Danzenbaker hive is all right in localities non-propolized.) There was no such thing as not disturbing the bees whenever a frame was removed. I did well if I didn't smash the whole business. To pull the little flimsy follower all to pieces was generally my first act. I borrowed a draw-knife and converted the closed-end frames into staple and nail spaced frames, and ripped the cleat from the center of the hive and nailed it near the top, taking care to place them so as to leave a bee-space over the frames. I then drove all rivets of the frames back, and substituted sixpenny nails, driving them near the top to support the frames.

Trouble? Yes, but now I have a hive containing open-end frames, which rest on cleats at the top of the hive, and are supported by nails—a hive which I like very much, and can overhaul at any time without the aid of the whole paraphernalia of a carpenter's shop. A good, strong screw-driver is all that is needed.

Perhaps some day I'll give my experience with my observatory hive. MRS. C. D. MEARS.

I wonder, Mrs. Mears, if all the sisters will enjoy as hearty a laugh over your letter as I did. Now you may not think this very sympathetic, but, really, you must not be so entertaining in your recitals if you expect us to weep over them. However, you seem equal to any emergency and do not need our sympathy very badly. If all were equally frank in telling of their failures as well as their successes we might receive much benefit.

You say your best colony gave you 143 finished sections while some colonies having black queens gave—nothing. Now perhaps the fact that they were black was not the only reason why they did nothing, for some Italians are equally lazy, and it is a fact well worth remembering that by breeding from your best queen you can increase no little your average yield per colony.

Honey in Aikin Paper Bags—Fence Separators and Tall Sections.

MISS WILSON:—Beg pardon for breaking into the Sisters' department, but how am I to help it after reading Mrs. L. Schmitt's letter on page 23? "Oh, gee, but it's nice to be crazy," as the comic songs runs, but the editor of the "Oregonian" is still at large.

Mr. W. H. Pennington is one of my very good friends, and I have but recently returned from a short visit to his home yard. He is indeed an enthusiastic convert to the "Aikin honey-bag" system of putting up extracted honey. He has several honey-tanks of from perhaps a ton to about 5 tons capacity; from these the honey is drawn off into the Aikin bags.

Mr. Pennington has developed some exceedingly useful things in the line of moving bees, artificial pasturage, etc. He uses largely the standard 10-frame hive, with shallow extracting-supers of *unspaced* frames. He has 80 colonies in hives containing 13 frames of the regular Dadant size, and they always give a satisfactory crop and fill the supers just as quickly as do those in the 8 or 10 frame hives. But, in a good season, they *swarm*.

Yes, you may be sure "that honey is all right."

Just tell "the sisters" to go slow in the fence-separator-tall-section fad. I have been all through it, an enthusiastic advocate of its *mostly imaginary* advantages, to my great loss. Am now changing back to the good, old universally satisfactory 4¼ x 1⅞ section. Have 600 new supers containing single-tier wide frames (section-holder *with* top-bar). They are *the thing* here. Have some T supers, but they are *no good* for me and this locality. The wood of the sections is stained fearfully, and I am surprised that such is not the case in a "gluey" locality like Marengo.

Ada Co., Idaho, Jan. 14. E. F. ATWATER.

No need to apologize, "Brother" Atwater, for breaking into the Sisters' department in such a case. The amount of Mr. W. H. Pennington's honey crop was sufficient guarantee that he was all right.

The T super is all right at Marengo. Sorry such is not the case in your locality. Perhaps you do not use a little stick, as we do, to fill up the space between the sections at the top. That does not allow much chance for bee-glue.

AMERICAN BEE JOURNAL
ESTABLISHED IN 1861 — OLDEST BEE PAPER IN AMERICA

PUBLISHED WEEKLY BY
GEORGE W. YORK & COMPANY
334 Dearborn Street, Chicago, Ill.

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1st.—To promote the interests of its members.
2d.—To protect and defend its members in their lawful rights.
3d.—To enforce laws against the adulteration of honey.

Annual Membership Dues, $1.00.

General Manager and Treasurer—
N. E. FRANCE, Platteville, Wis.

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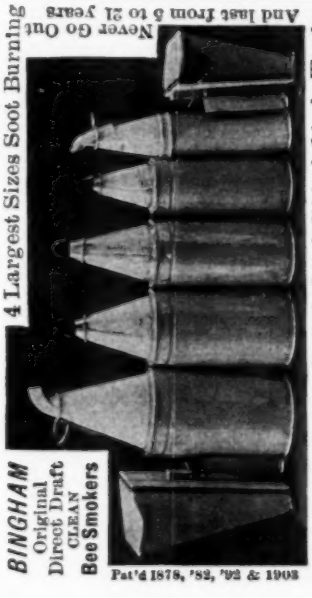
FOR SALE—About 50 colonies and enough hives for about 50 more; L. frames, dovetailed hives, 10-frame hives, Ideal supers, frames for each super, 2-frame Cowan Reversible honey-extractor, tank, etc., and honey-house, if desired. J. W. JACKSON, Opelousas, La.



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OTISVILLE, PA., Jan. 18, 1904.

Dear Sir:—I have tried almost everything in the smoker line; 3 in the last 3 years. In short if I want any more smokers your new style is good enough for me. I thank the editor of Review for what he said of it. Those remarks induced me to get mine. FRED FODNER.

Reports and Experiences

Cook County Bee-Keepers—A Hopeful Fraternity.

What is the matter with the bee-keepers in our county? I have not seen a report from any of them. Are they all in "blasted hopes" like myself?

I had about 100 colonies of bees April 1, 1904, and secured about 1500 pounds of extracted-honey, of not very good quality. I put very few sections on, as I saw that it was a useless task. The number of colonies has decreased to 95, and a few of them are weak. I fear they will not winter very well on account of poor stores. I have 40 colonies outdoors that had a good cleansing flight lately. The other 55 are in the cellar. They have more dead bees than usual, and they may suffer considerable loss especially if the spring is late. But I hope it will not be. We bee-keepers are a hopeful lot of people. We hope for a better season, hope for a better price of honey, hope that the trust will not raise the price of supplies, and a good many more hopes.

Many of the neighbor bee-keepers have stopped using movable-frame hives, and will run for bulk comb honey.

I have tried buying supplies from the "Cheap Johns", but do not want any more of them. Some of the goods are dear as a gift. I make my own hives and find that I can earn a big day's wages at it, doing it by hand. A. WICHERTS, SR.

Cook Co., Ill., Jan. 6.

Hoffman vs. Closed-End Frames.

DEAR MR. YORK:—Somebody who signs himself "Learner" wishes, on page 108, that I would make some explanations. I will respond to his request, but wish to say here that it is only because he is a learner, and knows no better, that I am willing to reply to

Mention this paper **EVERGREENS**

forest trees, nursery grown and hardy everywhere. All sizes for all purposes, at lowest prices. 50 bargain lots, all first class, prepaid, $1 to $10 per 100. Catalogue and bargain sheet free.
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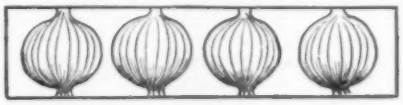

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1 1-2 STORY

8-frame HIVES, either plain, or bee-way supers, $1.00. No. 1 Sections, $4.00 for 1,000. 24-lb. Shipping-Cases, $13.00 for 100; 12-lb., $8.00 for 100; 20-lb. Danz., $11.00 for 100.

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I wish to sell 40 colonies of Bees. They are the Italian Strain, in a good, strong condition, and are wintering good. Reasons for selling: No time to take care of them. Will sell all, or 5 or 10 colonies. Inquire of

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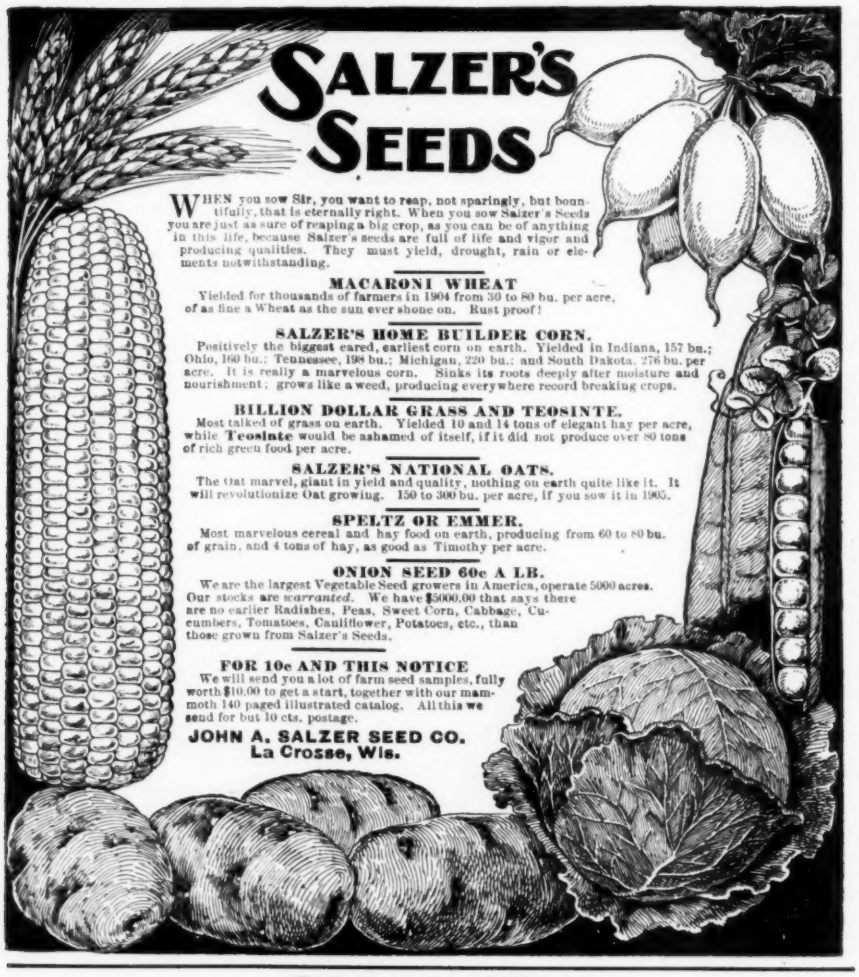
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WHEN you sow Sir, you want to reap, not sparingly, but bountifully, that is eternally right. When you sow Salzer's Seeds you are just as sure of reaping a big crop, as you can be of anything in this life, because Salzer's seeds are full of life and vigor and producing qualities. They must yield, drought, rain or elements notwithstanding.
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Positively the biggest eared, earliest corn on earth. Yielded in Indiana, 157 bu.; Ohio, 160 bu.; Tennessee, 198 bu.; Michigan, 220 bu.; and South Dakota, 276 bu. per acre. It is really a marvelous corn. Sinks its roots deeply after moisture and nourishment; grows like a weed, producing everywhere record breaking crops.
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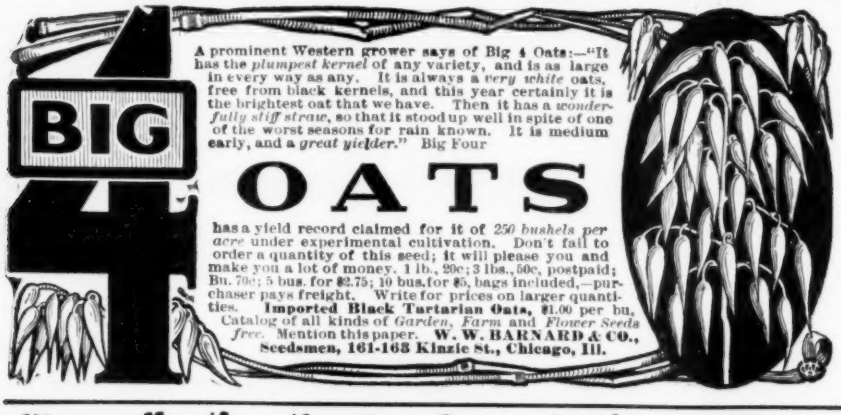
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OATS
has a yield record claimed for it of 250 bushels per acre under experimental cultivation. Don't fail to order a quantity of this seed; it will please you and make you a lot of money. 1 lb., 20c; 3 lbs., 50c, postpaid; Bu. 70c; 5 bus. for $2.75; 10 bus. for $5, bags included,—purchaser pays freight. Write for prices on larger quantities. Imported Black Tartarian Oats, $1.00 per bu. Catalog of all kinds of Garden, Farm and Flower Seeds free. Mention this paper. W. W. BARNARD & CO., Seedsmen, 161-163 Kinzie St., Chicago, Ill.

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a fellow who is afraid of his own honest name.

In the first place, Mr. Learner uses obscure language, and also puts an obscure interpretation on some of my own perfectly clear English. I say "wide bottom-bars", but he asks: "Which one of our sages is advocating close-fitting bottom-bars?" To that question I reply that I do not know, nor do I know what a "close-fitting bottom-bar" is. If Mr. Learner will read all that is on page 293 of the American Bee Journal for 1904, he will find an answer to his question, if he means to ask what sage is advocating wide bottom-bars. I refrain from naming the gentleman from other motives than those which cause my questioner to remain incognito.

Now let me explain why I disapprove of wide bottom-bars: If a bottom-bar is 1⅛ inches wide, and frames are spaced 1⅜ from center to center, there remains only ¼ inch of space on either side of the bottom-bar as the frame is lifted from the hive. Possibly that space may be increased slightly since the comb above will be less in thickness than the width of the bar, but there will be many places, especially near the top where there is only a bee-space between the sealed honey portions, where the space will be even less. Unless the frames are well spread before a frame is raised the bees will roll into a heap right above the bottom-bar, gathering something as a snow-ball gathers, and many will be maimed for life, if not killed outright. Any one who has lifted out a frame along the bottom edge of which has been built an unlooked-for strip of drone-comb will appreciate the result. I have seen dozens of bees rolling about with broken and crippled legs after a

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The farm garden that is well stocked with berries, bushes and vines, with roses and all sorts of small fruits, is a thing of beauty and a source of pleasure and profit. The orchard filled with fruit-trees and the lawn bordered with shade and ornamental trees, shrubs, etc., mark the home of the wise, widespread, progressive farmer.

It doesn't cost a great deal to add all of these attractions to the farm. The Gage County Nurseries, of Beatrice, Neb., right in the heart of the belt of where healthy trees are grown, has been in business for over 24 years, helping all that time to make the farm a better place to live, more attractive, more home-like, more profitable and more healthful. The beautiful homes it has helped to make dot the western prairies and eastern hills. From North to South all over the land it has sent its products and has gained a reputation for reliability, for honesty and fair dealing that it prizes very highly. The good words of its many regular customers prove that its policy is appreciated and that its products give universal satisfaction.

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frame has thus been injudiciously pulled out. After removing such a frame just take a peep down into the hive and see for yourself.

I prefer a bottom-bar less than an inch wide, otherwise I am greatly hindered in my work when the combs are crowded with brood, bees, and honey. Wide bottom-bars have ruined many a fine queen-cell, killed thousands upon thousands of bees, and not a few queens.

Mr. Learner has apparently bettered me in my argument relating to the advantages of the "closed-end" over the "Hoffman". Were I to admit that the advantage of the extra warmth was overbalanced by the disadvantage of the killed bees, I should here and now haul down my colors; but I do not admit that. My closed-end frames save many times the number of bees killed in bees kept alive. A few bees killed in the height of the season are not felt, but a few bees saved in spring make themselves felt. It is difficult to get people to appreciate this extra warmth of closed-end frames till they try them. To see absence of spring-dwindling, rapid and sure building up in spring, early swarming or early work in sections, will make many a bee-keeper shut his eyes to the disadvantages of the closed-end frames, and will let him scrape off the few flattened mum-

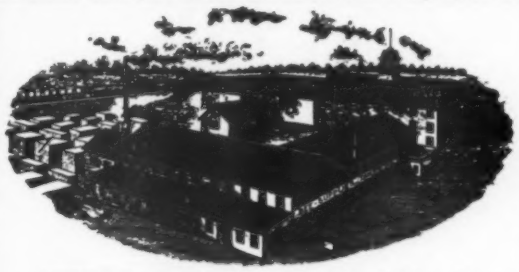
A TELEPHONE ON THE FARM.—Why not? Why shouldn't the farmer and his family enjoy the convenience of this modern time-saver? Why shouldn't the farm home be brightened in every way possible?

The great problem of keeping girls and boys contented on the farm would be solved in short order, if farm-life had more of the luxuries and conveniences the city offers; if a large share of the monotony and isolation of farm life were dispelled.

The farmer himself would be greatly benefited by the adoption of some of the more necessary modern improvements his city brother employs in his home and business. For instance, the telephone. Every farm should have a telephone. If any business man needs a telephone the farmer is that man. With a telephone the farmer, no matter how remote his location from the great centers of business, comes into close contact with the outside world. He may get the market reports every day and can sell his products when the market is right. Thus, the extra price he may realize from a single crop will often pay the entire cost of his telephone and the expense of building his line. A telephone keeps the farmer in touch with his neighbors, gets help to him without delay or loss of time when help is needed or accidents occur; calls the doctor quickly when emergencies arise, day or night; often saves a trip to town in busy seasons when time is money, and cements the entire neighborhood into one big, helpful family.

Farmers are awakening to the numerous advantages of owning their own telephones and lines. Hundreds of farm lines are being built all over the country. The improved telephones and appliances built especially for farm lines by the Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y., makes the building and operating of such lines a very simple and inexpensive proposition. No better instruments and apparatus are built, and the testimonials of hundreds of users prove that the success of their lines is due to the superiority of Stromberg-Carlson telephones. They are simple, do not get out of order, or require experts to operate them. They are built for durability and efficiency.

The Stromberg-Carlson Company will be glad to hear from farmers everywhere who are interested in knowing more about telephones and how to build and operate farm lines. They have a lot of valuable information which they will be glad to send free to farmers. Write for it, and please mention the American Bee Journal when writing.



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COMPLETE STOCK OF BEE SUPPLIES--LEWIS CO.'S AT FACTORY PRICES

MUTH SPECIAL HIVE THE BEST DOVE TAIL MADE

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We have the facilities, the experience, and just the kind of goods you want.
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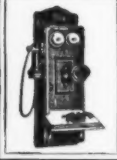

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To absolutely please bee-keepers in filling their wants has been our constant aim for eight years, and while we do not boast about ourselves we are sure that we are excelled by nobody. If you are not already a customer don't fail to write to us and tell us your wants.

Bees, Supplies, Honey and Beeswax.

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1004 E. Wash. Street, INDIANAPOLIS, IND.

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Are Perfect in Workmanship and Material.

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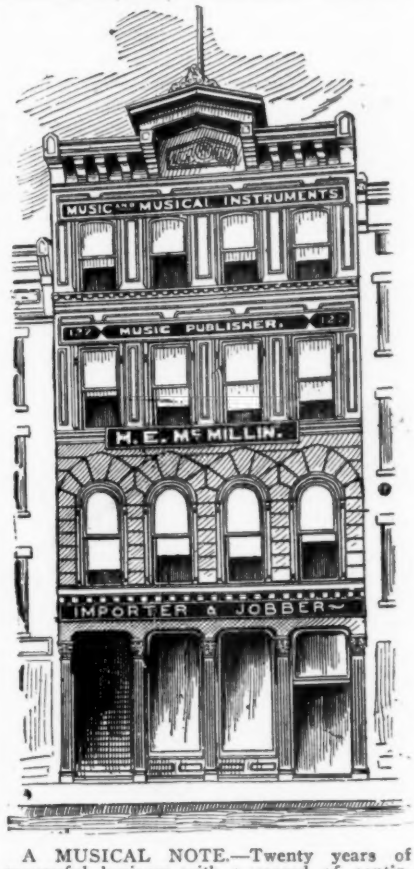
PAGE & LYON MFG. CO., New London, Wis. U.S.A

mies of bees from the edges of the frame without any qualms of feeling other than enough to cause him to seek methods of handling such frames so as to reduce this killing to a minimum.

I have trailed out this reply too much, but wish as a parting shot to say to Mr. Learner that he has misinterpreted my "one and a half advantages". The "closed-end" has many advantages, and of all of these only one and a half are possessed by the "Hoffman".

It may interest you to have me state that I looked into my observatory hives to-day and



A MUSICAL NOTE.—Twenty years of successful business with a record of continuous growth and expansion certainly signifies something. It means that merit and fair dealing must have been back of every transaction. Twenty years ago there was established in Cleveland, Ohio, a music house, by a practical music man with a fixed determination to build success strictly on QUALITY. To sell only the highest class of goods at as low a price as such goods could possibly be sold for direct to the customer, with only one small pront from maker to user.

Being a practical man he knew that Musical Instruments cannot be judged from the outside. Their merit is on the inside, and unless made with care will be without quality, while they may look all right. His success and the fact that he daily receives cash orders from all over the world proves that his instruments are made with the case that is required to give them true musical quality, as well as handsome appearance.

H. E. McMillin, Cleveland, Ohio, manufactures, imports and retails "EVERYTHING MUSICAL." Therefore his customers get the goods direct from headquarters, with the guarantee that they will be just as satisfactory as if the customer came direct to the store and made his purchase in person. Mr. McMillin looks back over his twenty prosperous years with pardonable pride, and forward to the future for a continuation of his business. His numerous customers always have a good word for his house. Mr. McMillin makes it a point to have every customer a pleased, satisfied customer. Write to him for catalogs of anything you may need in the music line, and you will readily understand why his business has grown to such proportions. Please mention the American Bee Journal when writing.

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GRIGGS BROS.
521 Monroe Street,
TOLEDO, - OHIO.

4A23t Please mention the Bee Journal.

could see only one dead bee in one hive, and none in the other. In the closed porch outside the entrances were 15 dead bees. These bees have not flown since Nov. 19. What does this say for wintering bees in observatory hives?

ALLEN LATHAM.

New London Co., Conn., Feb. 10.

Controlling Bee-Paralysis.

The report of the 35th annual convention of the National Bee-Keepers' Association held at St. Louis is a good one, and I read the report on bee-paralysis with much interest. I think I can throw a little light on keeping the disease under control.

Late in October, 1902, I found a bee-tree. The bees were 2 and 3 banded, and I transferred them into a movable-frame hive, and fed them up well. They came out in spring in good condition, and I increased them to 5 colonies. All 4 of the queen's daughters produced paralytic bees, and the old queen's progeny showed symptoms of the disease. Although the malady was hardly noticeable in spite of the immense number of bees dying at each hive-entrance, they went into winter quarters in good condition, and all came out fair colonies in the spring. One of them dwindled to nothing a month after being put out. The grass would be full of dying bees, and they would crawl out of the hives, some of them to die, and others would lay around the entrance on their backs for hours, with their legs quivering.

Just as soon as I could get queens I requeened the other 3 colonies, having for queens daughters of the old paralytic queen, before they got to rearing drones.

I allowed the colony containing the old paralytic queen to swarm once, hiving the new swarm and queen on the old stand. I put the parent colony on a new stand, and cut out all queen-cells and drone-brood, giving them a queen-cell from a healthy colony. The old queen being a very prolific one, I did not like to kill her, although she perished the

THE LITTLE WEATHER COCK.—This is the very appropriate name that Mr. Geo. H. Stahl has given to an entertaining, interesting little novelty which he will send free to any of our subscribers. It is a very fetching and saucy looking little rooster, so dressed that the color of its clothes foretells the weather—dry, wet or changing. It is a scientific weather forecasting device. Mr. Stahl

will send one free to any of our subscribers who will write to him for it, enclosing six cents for postage and packing and mentioning this paper. He will also send one of his new, large, illustrated Catalogs of the famous Excelsior Incubators and the Wooden Hens, which he has manufactured for the past twenty years. His advertisement will be found elsewhere in this paper. Address GEO. H. STAHL, QUINCY, ILL., and do not forget to mention the American Bee Journal when writing.

following winter with her colony. I have seen nothing of the paralysis since I got rid of those bees.

I don't believe bee-paralysis is a contagious disease, but I do believe it is hereditary. I would advise any bee-keeper who has the disease running through his apiary to requeen all colonies with queens which he knows are free from the disease, and mated to drones that are also free from it.

FRANK STOFLET.

Wood Co., Wis., Feb. 2.

Disposing of the Honey Crop at Home.

On page 51 expressions are called for from those who have been successful in selling their crops of honey in the home market. With the exception of one year I have sold mine at home for 30 years. The comb honey I sell at 10 cents per pound, the chunk honey at 9 cents, and the extracted at 8 cents.

My crop for 1904 was 1500 pounds, the least I have ever harvested. The most for any year was 4000 pounds. I aim to keep 35 colonies.

There are so many ways to begin that I can't explain all of them. The one I practiced most was always to have samples of honey with me, and not miss a chance to have people taste it, especially the children, for they almost always want more. Now, after 25 to 30 years those same children have homes of their own, and still have a taste for honey, and don't forget where to get it.

To illustrate: Years ago one little girl asked a good many questions about honey, and insisted on her folks buying once in a while. She is now married and lives in Kansas. Every fall she sends an order for honey, and knows just what to ask for. I have many such customers all through interesting the children.

Beginners sometimes think that the trade must all be worked up in one year. It is important to remember that it takes time, with lots of vim and push, to be successful.

As to packages, my standard for comb is 5-section cases (4¼x4¼x1⅞), always sold by the pound or by weight; for chunk honey 3-quart pails which hold about 10 pounds, and extracted in 3-quart pails holding about 10½ pounds. One should know what kind of packages best suit his class of customers, and how to put them up, and must keep everything clean and neat. J. H. SHEDENHELM.

Iowa Co., Iowa, Feb. 2.

Selling Small Honey-Crops in the Home Market.

As I have not written to the "Old Reliable" for some time, I would like to give my experience in selling small honey crops in the home market, called for on page 51.

I began keeping bees in 1895 with one colony, which I have increased to about 60. I have buckets that hold 10, 25, and 50 pounds, respectively. I do not take the honey on the street in large quantities to sell it, but I take orders from house to house, then fill the orders and deliver them later. In this way I can sell more honey and give better satisfaction than in any other way. I guarantee every pound of my honey, and agree to refund money for any that is not as I represent it.

I talk bees and honey whenever I have an opportunity, and exhibit bees at the county "Trades' Day". I have taken every premium on bees, wax, and honey that has been offered there since the Trades' Day was organized. Why? First, because I keep the best bees; second, because I have the best honey; and, third, because I take more pains with my apiary than any other man in this county. I show the bees and honey to every one who comes to the house, and in this way they become interested.

I have the 5⅜-inch deep extracting-frame, and use the Cowan extractor, No. 17. When filling orders, after having extracted some honey, I fill the buckets just as full as I can with comb, and then let enough extracted honey run in the pail to cover the comb. Then I put 2 or 3 sheets of nice paper over the honey, put on the lid, and the honey is ready for delivery; and when I reach the customers' homes the honey is just as nice as it was when I left home. I sometimes open a bucket and let people see and taste of it, and thus make satisfactory sales. Sometimes I get a new order from a lady who may be visiting where I am delivering the honey.

I can not produce enough honey to supply my trade, and orders are coming in from other cities. I sell it at home for 10 cents per pound, but when I take it to the market I charge 12½ cents in small quantities. When 50 to 100 pounds are taken, I sell at 10 cents per pound.

Bee-keepers are doing harm here by not working together. Some of them bring nice honey into town and sell it for whatever price the merchant will offer for it. Then there are others that take no special interest in the bees, and bring old black combs to the market which will discourage one from ever wanting to see any more honey. These are some of the things that I have to contend with.

M. H. SOSSAMAN.

Franklin Co., Ark., Jan. 30.

SCIENCE VS. NATURE.—Among the many enterprises connected with the large and ever-increasing poultry industry of the country, perhaps none is of greater importance than the manufacture of hatching machines, or incubators, as they are commonly called. The brains and inventive genius expended in perfecting the practical utility of these machines is evidenced by the surprising results which some of them achieve. In fact, such a close approach to natural conditions combined with commercial practicability has been attained that the "settin' hen" has been almost crowded out of business, even among the smaller poultry-raisers, while among the larger farms artificial incubation has reached huge proportions and is used exclusively. To meet these demands many different machines are offered, each claiming peculiar merit. Among these the Ormas Incubator, manufactured by L. A. Banta, of Ligonier, Ind., occupies a prominent place. The Ormas line, which includes Brooders also, are models of scientific efficiency and judging from the testimony of those who use them, give good satisfaction. Mr. Banta sends a beautifully illustrated catalogue, containing full description and prices, free to all who request it. Please mention the American Bee Journal when writing. Address, L. A. Banta, Ligonier, Ind.

CONVENTION NOTICE.

Utah.—The Utah Bee-Keepers' Association will hold its spring convention in the Mayor's Office, City and County Building, April 7, at 10 a.m. All are invited. Matters of great interest to bee-keepers, and horticulturists will be considered. Cache Valley's experience of killing the bees by poison spraying in the bloom must not be repeated. Jot down your thoughts on this or any other question, and bring or mail the same. G. E. GARRETT, Sec.

E. S. LOVESY, Pres.

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"Edge drop" planters are no good unless the seed is of even size and perfect shape. I breed corn with perfect and uniform kernels and I grade all my shelled seed with a specially constructed mill that throws out every uneven, round or thick kernel better than you could possibly do it by hand. Every kernel must be just like every other—even, flat, just right. That means even, accurate planting and a perfect stand. No trouble, no delay. All my shelled seed is screened this way, a feature no other seed man can offer. Samples and catalog free.

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I publish and recommend to you THE RURAL BEE-KEEPER, the best all-around 50-cent monthly bee-journal in America. On trial 3 months for this ad. with 10 cents. Clubbed with this publication both for one year for $1.25; or send us 25 cents for a 3 months' trial and your name and address on a 2-line rubber stamp; self-inking pad, 25c extra. Or send $1.00 and get The Rural Bee-Keeper and an Untested Italian Queen-Bee. Sample copy free. Agents get liberal terms.

Putnam Makes Good Bee-Hives

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For Queens SEND TO JOHN W. PHARR Berclair, Tex.

He will furnish at same prices as last year: Tested, $1; Untested, 75c; 5 for $3.25; 10 for $6; 15 for $8.25; 25 for $12.50; 100 for $45. He breeds Goldens, Carniolans and 3-Band Italians. Also 1, 2, and 3 frame Nuclei, and full colonies. Prices given on application. Pharr pays the freight, and guarantees satisfaction on all Queens. To do justice and judgment is more acceptable with the Lord than sacrifice.—(Prov. 3: 21.) 6Atf

Wanted Man 20 to 30 years old capable of taking charge of an apiary of 200 colonies. Can give employment balance of year collecting and soliciting for lumber and coal. In answering give reference and salary expected. TRESTER SUPPLY CO. LINCOLN NEB

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A 20TH CENTURY WONDER.—The Cycle Hatcher, a metal machine for hatching chickens, is styled a 20th Century Wonder. It embraces features not found in any other machine and is a new departure in the incubator world. It was designed to take the place of the hen, and is offered as an improvement over wooden machines, embodying principles that cannot be attained with a wooden construction.

Being made entirely of metal and asbestos it is absolutely fireproof, will not swell or shrink, and is not affected by varying conditions of atmosphere, as wooden machines are. It is the result of years of experiments conducted by a practical poultryman with an ambition. His ambition was two-fold; he wanted to make a metal machine that would get nearer to the mother-hen conditions in the hatching process, and then he wanted to be able to sell that machine for $5.00. Five dollars is a nice, easy price to pay; it's even money, and, while it don't leave the manufacturer much profit, he figured that people could afford to buy several of them. In fact, his experience with hatching machines convinced him that three 50-egg incubators were better than one with 150-egg capacity. His reasons for this are interesting, and fully set forth in the catalog advertising his machine.

The Cycle Hatcher, sold for $5.00, is a complete machine, and includes everything necessary to hatch eggs but the oil. It is made by the Cycle Hatcher Company, of Salem, N. Y., who would like to place a copy of their new catalog in the hands of every poultry-raiser and everybody interested in hatching chickens. They will send it free to all applicants; simply mention the American Bee Journal when you write.

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JAMESTOWN, N. Y.

FIGHTING WAS KEEN.—St. Louis, Dec. 1.—"The friendly competition" entered into by the world's manufacturers at the Exposition has turned into a regular free-for-all fight, and its fury has centered around the typewriter award, which was finally decided today when the Exposition officially awarded the Oliver Typewriter the gold medal as a mark of its practical superiority. Each exhibitor presented a score of claims why he should get honors as against all comers, and the competition became so keen that each firm felt the entire standing of their business was tied up in the receipt of the prized medal. All the typewriter exhibitors being American, they displayed a spirit of Yankee fight that made decision hard. Some of them even went so far as to anticipate results, and announced several weeks ago that they had won in the contest, though the official award was only made today, and as a result the Oliver Typewriter people are being congratulated on winning a great victory.—Special to Chicago Evening Post.

LOSS BY LICE

on poultry amounts to many times the cost of **Lambert's Death to Lice**—the sure preventive. Loss can be saved and profit made by its use. Frees sitting hens from lice without harming eggs or chicks. A trial 10c box will prove it. 100 oz., by express, $1.00.

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Honey and Beeswax

CHICAGO, Feb. 8.—The trade in honey is still below the normal in volume with prices unchanged, except that the pressure on the part of the holders to realize is more urgent. Fancy white comb honey, 12½@13c; No. 1, 12c; off grades, 10@11c. Extracted, white, 6@7c, according to flavor, quality and package; anything off is lower; amber grades, 5½@6½c. Beeswax, 30c per pound, if clean and good color.
R. A. BURNETT & Co.

BOSTON, Feb. 8.—Sales of honey still continue light, principally on account of the extreme cold weather which we are having. On account of the large stocks in hand, prices that we have quoted are shaded in round lots. Fancy white, 15@16c; A 1, 15c; No. 1, 14c. Extracted, from 6@7c, as to quality. BLAKE, SCOTT & LEE.

KANSAS CITY, Jan. 9.—The demand for comb honey still continues light, as most of the retail dealers were stocked up on $2.25 honey before the holidays, two cars of which were sold here at that time. We look for a better market in the near future, and quote: Fancy comb, 24-section cases, $2.50; No. 1, $2.25. Extracted, white, per pound, 6@6½c; amber, 5½@6c. Beeswax, No. 1, 28@30c. C. C. CLEMONS & Co.

CINCINNATI, O., Feb. 7.—Comb honey is now coming in more freely, and prices if anything have moderated a little. The sales made and prices obtained were for No. 1 fancy water-white comb, 12@13½c; single cases, 14c. Extracted is sold as follows: White clover, in barrels, 6½c; in cans, 7¼@8c; amber, in barrels, 5¼@5½c; in cans, 6@6½c. Beeswax, 27c.
C. H. W. WEBER

PHILADELPHIA, Feb. 8.—The market of all grades of comb honey continues rather weak and trading light, with a good supply on hand. We quote: Fancy white, 15@16c; No. 1, 13@14c; amber, 11@12c. Extracted, white, 7@8c; amber, 6@7c. Beeswax, 28c.
We are producers of honey and do not handle on commission. WM. A. SELSER.

CINCINNATI, Feb. 17.—The demand for honey at the present time is like business—frozen. Nevertheless, we are looking forward to a brighter future. We quote amber extracted honey in barrels and cans at 6@6½c, respectively; white clover at 7@8c.

The conditions of the comb honey market are aught but encouraging, owing to the vast amount of Western comb honey that is being consigned at almost any price. We quote fancy white at 12@13c, with but few sales. Beeswax, 27c. THE FRED W. MUTH CO.

ALBANY, N.Y., Feb. 8.—Honey market dull this extreme cold weather, especially comb, which candies or granulates and cracks easily. We quote: Fancy white, 13@14c; No. 1, 12@13c; mixed, 10@11c; buckwheat, 10@11c. Extracted, better demand: Buckwheat, 6@6½c; white, 6@6½c. Buckwheat most in demand, as the Jewish people will have no other. Beeswax, 30@32c. H. R. WRIGHT.

SAN FRANCISCO, Feb. 8.—White comb, 1-lb. sections, 11@12 cents; amber, 8@10c. Extracted, white, 6@6¼ cents; light amber, 4½@5¼c; amber, 3½@4¼c; dark amber, 3@3½c. Beeswax, good to choice, light, 29@30c; dark, 27@28c.
Market is quiet and easy in tone, especially for amber grades, stocks of which are fairly liberal, and include several lots of Hawaiian Island product. There is not much strictly choice water-white honey offering.

NEW YORK, Feb. 8.—The market is decidedly dull on comb honey and very little moving, with plentiful supply. We quote: Fancy white comb, 14c; No. 1, 13c; amber, 11c; dark, 9@10c. Extracted honey is in fair demand, and prices remain about the same. Beeswax steady and in good demand at 29c.
HILDRETH & SEGELKEN.

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85 colonies, mostly pure Italians, Moore's strain. In 8-fr. dovetailed hives; hives as good as new. Must be sold before spring. Write at once if you want a bargain. Bees are in fine shape. No disease or foul brood.

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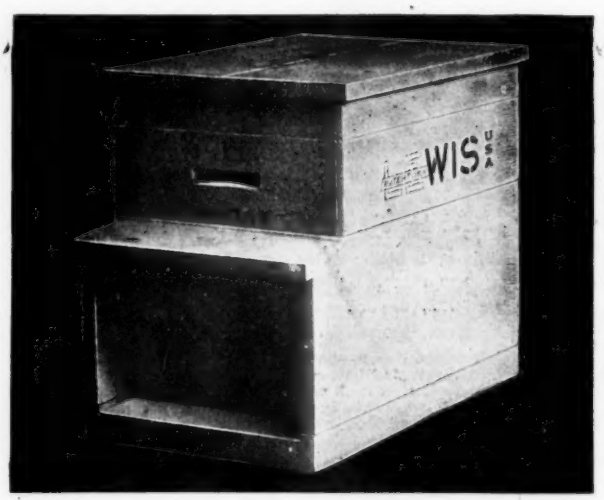

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